Journal
OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION

Joint Pan American-AVMA Meeting, Kansas City, August 23-27, 1959

General Articles

Surgery and Obstetrics

Clinical Data

Editorial

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Vol. 134 **April 15, 1959** **No. 8**

Now "capsule shy" pets can worm themselves with tasty CANDIZINE Tablets

(pet candy with piperazine)

Clients dread wrestling their pets to take capsules. So for pets with large roundworms, dispense palatable CANDIZINE Tablets and let the dog or cat worm itself.

Utilizing a tasteless grade of piperazine phosphate in a base of blended food and flavor ingredients, CANDIZINE is readily eaten by most small animal patients —either in tablet form or crushed and mixed with the feed. And CANDIZINE requires no fasting, eliminating pre-treatment fuss and bother.

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Journal of the American Veterinary Medical Association

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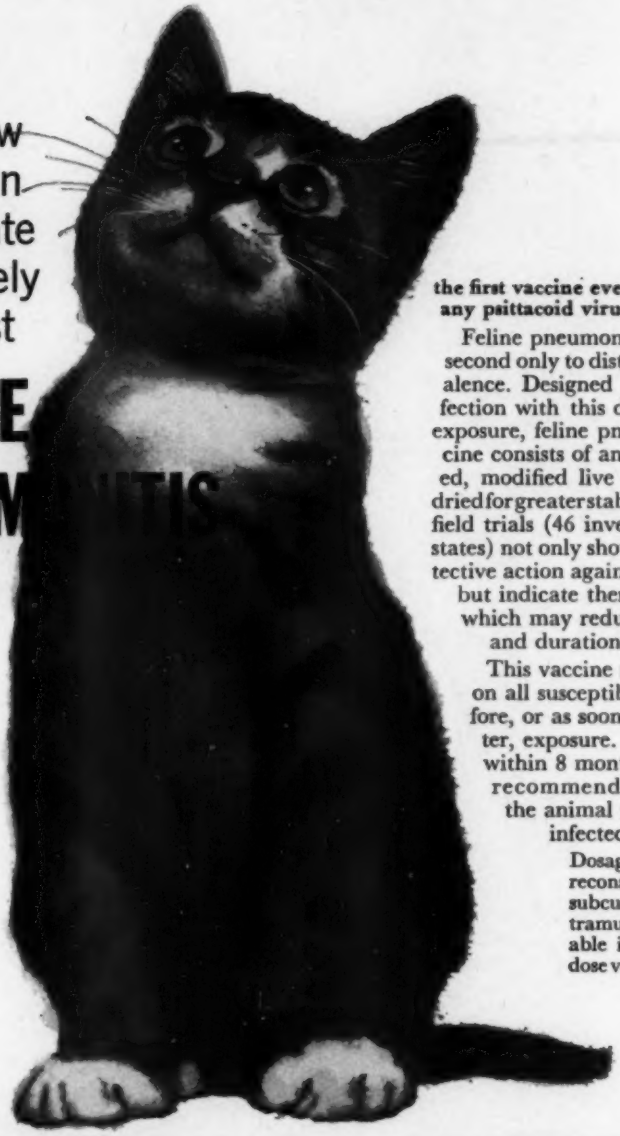
now you can vaccinate effectively against

FELINE PNEUMONITIS



the first vaccine ever developed for any psittacoid virus disease

Feline pneumonitis is a disease second only to distemper in prevalence. Designed to prevent infection with this disease prior to exposure, feline pneumonitis vaccine consists of an egg-propagated, modified live virus, vacuum dried for greater stability. Extensive field trials (46 investigators in 13 states) not only show a highly protective action against pneumonitis but indicate therapeutic effects which may reduce the severity and duration of the disease.

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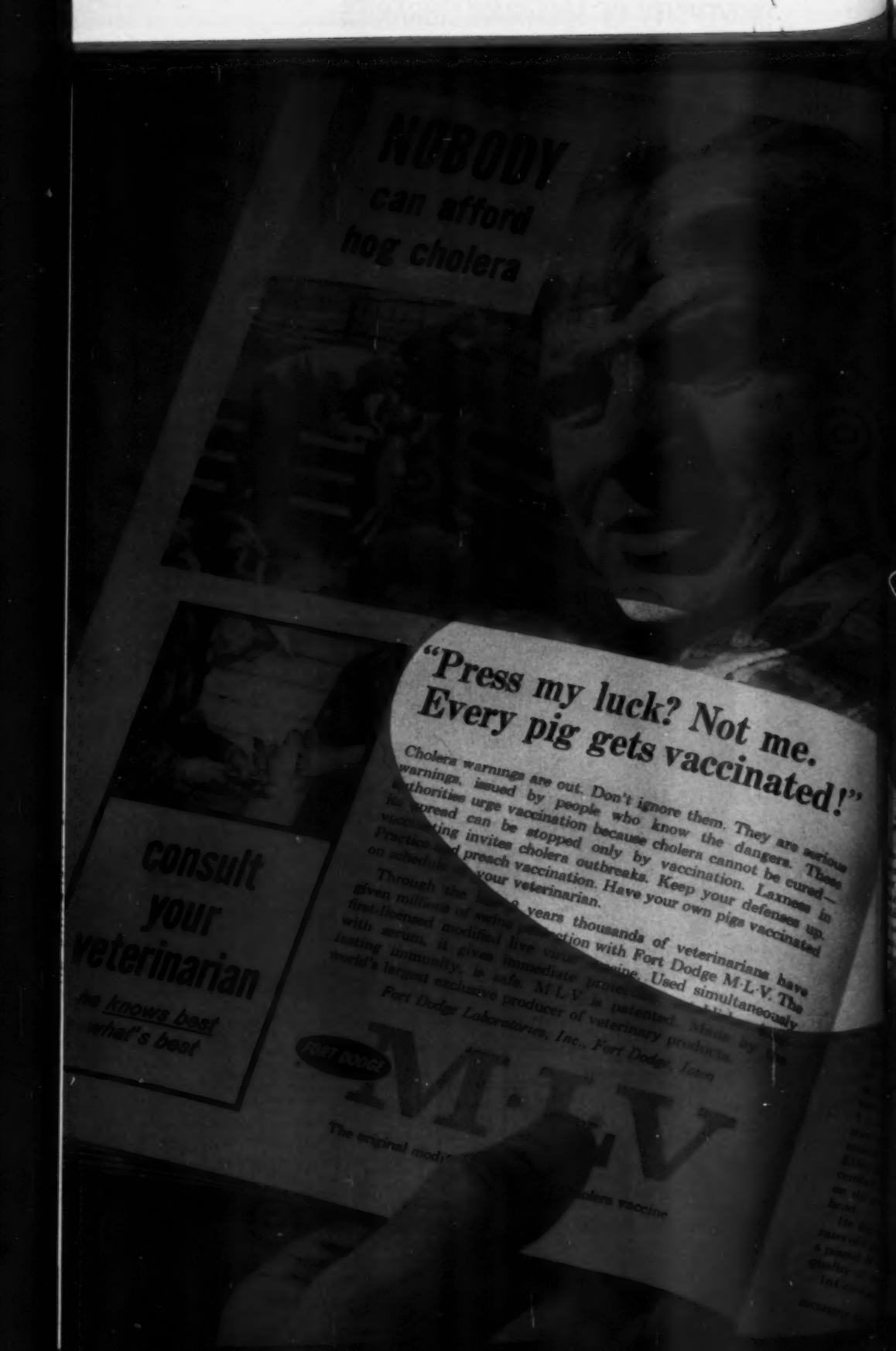
(Bio. 804)

extensive field trials show 86% of cats protected by vaccine				therapeutic effects also indicated			
No. of cats	Status	No. of cats remaining well	No. of cats developing symptoms	No. of cats	Status	No. of cats recovering in 5 days	No. of cats remaining sick after 5 days
1482	vaccinated	1254 (86%)	208 (14%)	611	treated	449 (74%)	162 (26%)
809	controls	483 (60%)	326 (40%)	379	controls	66 (17%)	313 (83%)
field use in noninfected cats				field use in infected cats			

PITMAN-MOORE COMPANY Division, **ALLIED LABORATORIES, INC.**, Indianapolis, Indiana


NOBODY
can afford
hog cholera
consult
your
veterinarian
he knows best
what's best
"Press my luck? Not me.
Every pig gets vaccinated!"
Cholera warnings are out. Don't ignore them. They are serious
warnings, issued by people who know the dangers. These
authorities urge vaccination because cholera cannot be cured—
its spread can be stopped only by vaccination. Laxness in
vaccinating invites cholera outbreaks. Keep your defenses up.
Practice and preach vaccination. Have your own pigs vaccinated
on schedule by your veterinarian.
Through the years thousands of veterinarians have
given millions of safe, effective vaccination with Fort Dodge M·L·V. The
first-licensed modified live virus hog cholera vaccine. Used simultaneously
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world's largest exclusive producer of veterinary products.
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FORT DODGE
M·L·V
The original modified
cholera vaccine

Part of the fight against cholera is a fight against complacency

A situation of wide concern has prompted Fort Dodge Laboratories to address a series of educational messages to farmers. You are familiar with the alarm expressed by the USDA, farm publications and livestock organizations at the downward trend in hog cholera vaccinations. There is real fear that the swine industry may be ripe for a serious cholera outbreak.

To encourage broader programs of vaccination, reminder messages are being published in leading national, regional and local farm magazines for a total of 15,723,268 impressions. They point out the dangers that complacency can create. They stress the advantages of veterinary services. They invite confidence in the 8-year record of M·L·V. . . the original, first-licensed modified live virus vaccine.

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National Livestock Producer • Daily Drovers Journal
Daily Drovers Telegram • Daily Journal Stockman
Daily Livestock Reporter • Progressive Farmer
Ohio Farmer • Missouri Ruralist • Prairie Farmer • The Farmer
Wallaces Farmer • Nebraska Farmer

Correspondence

The following is with reference to an abstract from a Russian Journal translated by Dr. Robert E. Habel of Cornell University:

Feb. 20, 1959

Dear Dr. Habel:

I was interested in your translation of an article from *Veterinariya* entitled "Infectious Atrophic Rhinitis of Swine," appearing in the *J.A.V.M.A.*, Feb. 15, 1959, page 193. It is important, I think, to determine whether the disease referred to is the same as one in North America bearing the same name. There are some important differences in the description, and for this reason I am wondering whether or not the title is merely a free translation.

The most important difference is that the disease reported causes a mortality of 80 to 90 per cent among little pigs in some droves. In my experience, infectious atrophic rhinitis in North America rarely terminates fatally except through secondary complications. It is suggested that enteritis which accompanies the rhinitis causes many deaths; this may mean that enteritis is a frequent sequel, which is not the case on this continent. Since the lesions were not described fully, it is not known whether atrophy is a cardinal entity in the pathology of the disease reported. As you no doubt know, *Trichomonas suis* has been incriminated by some workers in North America while others have examined numerous typical cases without finding the organism.

The main reason for writing this letter is to find out if the writers of this article have used the exact words that we use as the name of an important disease.

The fact that you make information contained in articles of this kind available to readers of the *J.A.V.M.A.* is very much appreciated.

Yours truly,
s/T. LLOYD JONES
Guelph, Ontario

+ + +

Following are excerpts of the replies:

Feb. 25, 1959

Dear Dr. Jones:

The name of the disease was translated by the Russians in their English table of contents as "Infectious Atrophic Rhinitis."

Feb. 28, 1959

I was unable to refer to the original of the article on atrophic rhinitis when I answered your letter the first time, but I now have it before me. There is no question about the translation of the name of the disease. It is a simple Russian transliteration of the term we use: *infektsionnyi atroficheskii rinit.* The authors are fully aware of the western literature on the subject.

The pathology is described in detail. In pigs that died in the enteritis stage, a mucopurulent exudate was found in the nasal passages, and the mucosa was hyperemic and occasionally petechiated. The pyloric part of the stomach exhibited congestion, petechiae, and occasionally ulceration. Catarrhal and hemorrhagic enteritis was seen, especially in the large intestine. Ulcers occurred in the rectum.

In older animals the lesions were localized predominantly in the nasal cavity, sinuses, and the lymph nodes of the head.

The normal pneumatization of the facial bones had occurred but there was abnormal development of the nose and paranasal sinuses, resulting in changes in the form of the facial parts of the skull—asymmetry of the nasal and paranasal cavities, deviation of the nasal septum to the sound side, depression of the maxillae at the base of the nose, and curvature of the nasal bones upward or laterally.

The morphology and culture of *T. suis* is described.

Inoculations were done in four series of experiments on 8 healthy 1-month-old pigs from a clean farm. Three groups inoculated with "a pure culture of trichomonads; that is, the contents of the nasal cavity of swine affected with rhinitis," and also the group that was inoculated with a mixed culture of trichomonads and bacteria, contracted atrophic rhinitis. The pigs that were inoculated only with bacteria cultured from the nasal cavity of a pig with atrophic rhinitis did not get the disease. The authors do not say that they produced enteritis experimentally. The report of the experiments leaves much to be desired. The implication is that 4 x 8, or 32 swine were used, but this is not stated clearly. Also, one might question whether nasal contents could be considered a pure culture of trichomonads. As I said in the abstract, the authors do not mention the incidence of trichomonads in healthy swine. They concluded that the protozoan is the primary cause, damaging the mucosa and carrying the pyogenic bacteria into the tissues.

If you wish further information, I suggest that you write to the author: Docent A. V. Cherkasova, Uzbek Agricultural Institute, Tashkent, Uzbek S.S.R.

Sincerely,
s/ROBERT E. HABEL
Ithaca, N.Y.

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Dermatoses	5 mg./10 pounds body weight, total single dose not to exceed 20 mg. For sustained therapy, repeat once or twice a week as indicated.
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References: 1. Vigue, R. F.: J.A.V.M.A. 133:326 (Sept. 15) 1958. 2. Shaw, J. C.: Personal communication. 3. Pollock, S.: Vet. Med. 54:97 (Feb.) 1959. 4. Rabin, P. H.: Personal communication. 5. Hoffer, S. H.: Personal communication. 6. Weir, H. T., and Hazelrig, J. W.: Personal communication. 7. Beck, J. W.: Personal communication. 8. Bull, W. S.: Personal communication. 9. Fessenden, P. E.: Personal communication. 10. Lohmeyer, C.: Personal communication.

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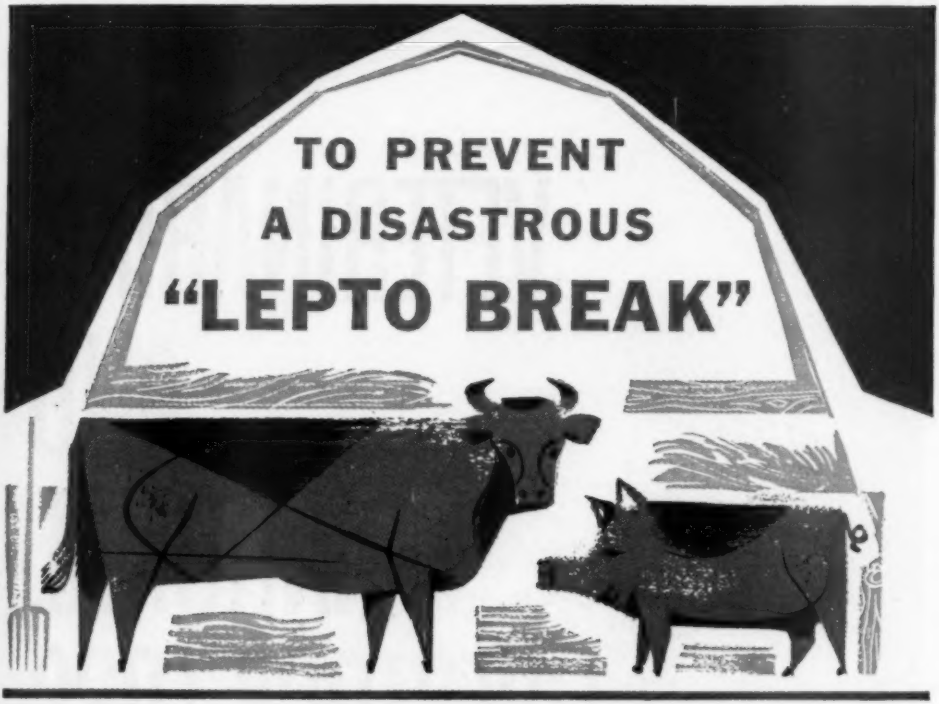

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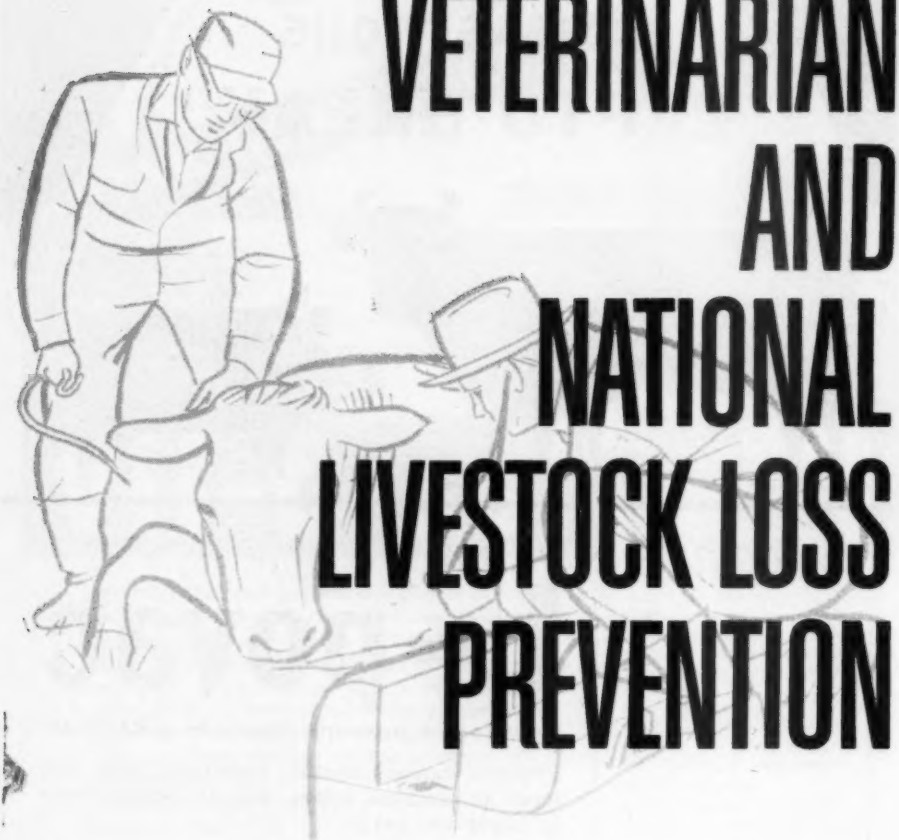

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YEAR

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- *alerting farmers to the $2 billions-a-year losses they now suffer from livestock diseases.*
- *teaching farmers that only through the veterinarian can they find a dependable means of reducing these losses.*

This year-'round drive, through newspapers, farm magazines, radio, television, and associated groups is sponsored by the American Foundation for Animal Health. It is underwritten by the member companies of Associated Veterinary Laboratories, whose names are listed on the opposite page.

new Panplex* and the D.V.M.

Once, there was this D.V.M. (a competent practitioner, but he had his problems). His patients hated him because when antibiotics were indicated, he'd pop four pills down their throats. Also, he had to rent a big office (which he couldn't afford) to store all the pills.

Then, he read an ad on Upjohn's new PANPLEX CAPSULES. It showed how Upjohn had squeezed four potent antibiotics into one economical capsule: *Panmycin*† for broad antibacterial action; *Albamycin*† to control resistant micrococci; *Nystatin* to suppress fungal overgrowth; and *Penicillin G. Potassium* for added impact.

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PANPLEX CAPSULES are recommended in the treatment of the following conditions:

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Cats: pneumonia, enteritis, abscesses, infected wounds, bacterial complications of viral diseases, and for pre- and postoperative prophylaxis.

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Washington News

Legislative.—The draft bill, H.R. 2260 (see JOURNAL, March 15, 1959, adv. p. 16) passed the Senate on March 11. The Senate inserted an amendment, approved by the House, **which continues special pay for** physicians, dentists, and **veterinarians** until July 1, 1963.

The Keogh-Simpson tax deferment bill (see JOURNAL, March 15, 1959, adv. p. 16) passed the House March 16, 1959. The bill was sent to the Senate and referred to the Finance Committee. It is not known whether the committee will schedule hearings for this or the next session of the Congress.

New Bills.—H.R. 4912, Rep. Brooks (D., La.), to authorize the National Science Foundation, through basic research, to **develop food supplies for extended space travel.** H.R. 5467, Rep. Dixon (R., Utah), **to provide financial aid** to states in certain **surveying and planning** with respect to college facilities. The bill would not authorize funds for any college facilities or college expansion programs. S. 1017, Sen. Morton (R., Ky.) and ten co-sponsors, would assist institutions of higher education to market and retire bonds issued by them to finance the construction of college facilities.

H.R. 5886, Rep. Hagen (D., Calif.), to amend the Act June 5, 1948, relating to the Meat Inspection Service of Department of Agriculture and **to permit recognition of the meat inspection services of the various states.**

H.R. 5903, Rep. Grant (D., Ala.), **to control** the preparation, distribution, importation, and exportation of **virulent hog cholera virus.**

S. 1009, Senator Sparkman, (D., Ala.), and 11 co-sponsors, to amend the Internal Revenue Law **to encourage establishment of voluntary retirement plans** by all individuals. With certain exceptions, the total amount deductible for any taxable year could not exceed $1,000, or 10 per cent of adjusted gross income, whichever is the lesser.

S. 1204, Sen. Stennis (D., Miss.), would provide a **regional laboratory** at Mississippi State University for the conduct of **basic research relating to biological control of boll weevil** and other insects.

S. 1459, Sen. Wiley (R., Wis.), to establish a **dairy research program.**

S.J. Res. 66, Sen. Eastland (D., Miss.), and 43 co-sponsors, provide for centennial celebration of the establishment of land-grant colleges and state universities, and the establishment of the Department of Agriculture.

H.J. Res. 293, Rep. Chipperfield (R., Ill.), to establish a National Institute for International Medical Research. It is identical with S.J. Res. 41 (see JOURNAL, March 15, 1959, adv. p. 16).

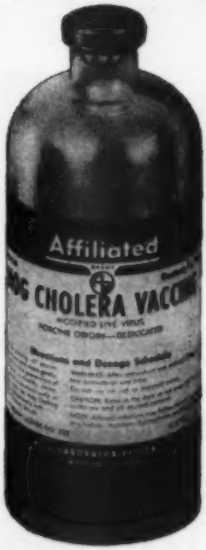
S.J. Res. 42, Sen. Humphrey (D., Minn.), authorizing the Committee on Governmental Operations to make **a complete study pertaining to international activities** of federal executive branch departments and agencies **in the field of health and medical affairs.**

S.J. Res. 43, Sen. Javits (R., N.Y.), and four other senators, would establish a **Health Services Study Commission** to study health service needs of the population, and the effect expanded **health insurance coverage** programs would have upon the adequacy of the present number of health personnel and facilities.

* * * *

Miscellaneous.—Secretary Fleming, HEW, announced completion of the first successful field trial of fluorescent antibody technique in rapid identification of rabies virus in animals. With the cooperation of the Florida Board of Health, 144 cases of suspected rabies were put to this relatively new test, which takes only a few minutes.

In comparing results, using the standard rabies test with mice produced 100 per cent agreement. Field investigation of the method's effectiveness in rapid diagnosis of streptococcal infections is now being considered.



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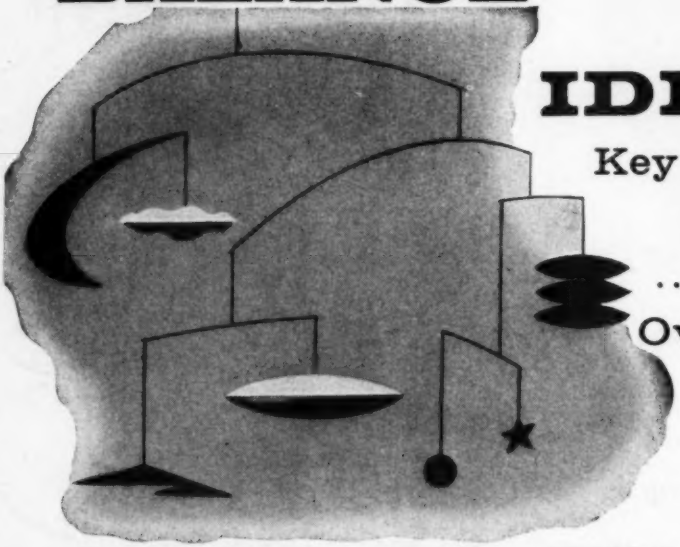

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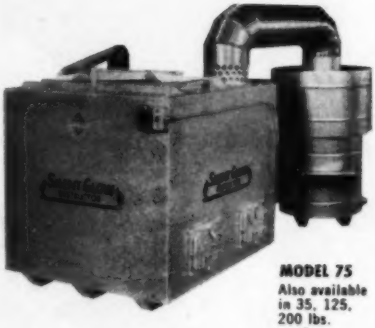

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1. Mires, M. H., and Chadwick, R. H.: Vet. News 10:3 (Jan.-Feb.) 1947. 2. Mires, M. H.: J. Am. Vet. M. Ass. 117:49 (July) 1950.

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Clinical Spinal Radiography in the Dog

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THE DIAGNOSIS of clinical spinal conditions in the dog depends on history, breed, age, physical and neurological signs, laboratory and radiographic examinations.[3-8,13,14,16] Radiography is especially necessary to determine the prognosis and the exact location of the lesion.[1,9,15,17] The practicing veterinarian who does not have access to standard or better than average radiographic equipment will be greatly handicapped in the proper treatment of spinal lesions.

portable 10 ma., 60 kv. p. apparatus to large stationary 100 to 300 ma., 100 kv. p. units. A Potter-Bucky diaphragm or a fine-line stationary grid is needed to limit scatter radiation, especially in the thoracic and lumbar areas. A tiltable table is needed for contrast myelography.

The techniques involved in spinal radiography should be followed meticulously. Routinely, lateral and ventrodorsal (VD) views are used. Occasionally, an oblique

Fig. 1—A cisternal tap is performed by introducing a spinal needle midway between the wings of the atlas (a) and the occipital protuberance (b) on the dorsal midline.
Fig. 2—A cisternal tap in a dog—wing of atlas (a); occipital protuberance (b); and spinal fluid (c).

EQUIPMENT AND TECHNIQUE

The equipment for routine diagnostic spinography may vary from the standard

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view can be employed advantageously in the thoracic area. The VD view should be used to establish whether the lesion seen in the lateral view is in the disc, spinal canal, or to one side of the vertebral column. Special care should be taken so that the central portion of the primary rays are directly over the location of the suspected

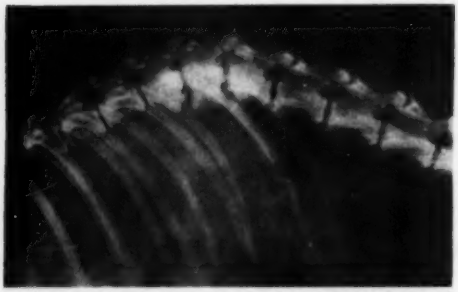

Fig. 3—Radiograph showing osteomyelitis of T 12, T 13, and L 1 in the spinal column of a dog.

lesion. Superimposition of anatomic parts inhibits accurate interpretation.

The technique of contrast myelography has been well established.[2,9,10,14,15] It should not be used indiscriminately, since the medium can cause a subclinical leptomeningeal reaction; it should be used to diagnose and locate a lesion that doesn't show clearly in a normal contrast radiograph. The procedure used on the anesthetized animal can be briefly outlined:

1) Place the dog in a sternal recumbent position; flex head downward to nearly a 90-degree angle with the neck.

2) Palpate the occipital protuberance and indicate a transverse line between the most prominent part of each wing of the atlas. At a point in the median plane, slightly posterior to the half way point from the protuberances to this line, direct the spinal needle (22-gauge Quincke) perpendicular to the cervical axis until the cisterna magna is reached (fig. 1, 2).

3) With the bevel of the needle directed posteriorly, 1 to 3 cc. of spinal fluid (depending upon size of dog) is withdrawn slowly. The same amount of contrast medium* is slowly injected into the subarachnoid space.

4) The dog's head is then kept elevated and the body is tilted head upward at a 45- to 60-degree angle to facilitate the caudal migration of medium. Spot dorsoventral radiographs are taken periodically, e.g. at 10-, 15-, 20-minute intervals, to trace the flow of the medium. When the flow has stopped, a lateral radiograph is taken. Frequently, the opaque medium will stop from one half to one vertebra anterior to the lesion. The contrast medium is not removed from the subarachnoid space.

RADIOGRAPHIC INTERPRETATION

There are, of course, many conditions such as rabies, canine distemper, and toxoplasmosis, in which radiographic examinations are of little or no diagnostic value. Any condition or disease that will cause a change in the bony vertebrae, the spinal canal, or the intervertebral spaces can be diagnosed by radiographic examination.[10,11] Therefore, the various conditions or lesions which are readily identified by radiography will be discussed.

Fig. 4—Spondylitis in the vertebral column of a dog —"spur" formation (a) and nearly complete ossification (b).

Osteomyelitis.—Osteomyelitis of the spinal column is usually due to a traumatic introduction of a microbial agent. The radiographic findings generally reveal a proliferation or lysis of bone, or both, and

*Such as Pantopaque produced by Lafayette Pharmacal Co., Lafayette, Ind.

is characterized by a so-called "moth-eaten" appearance (fig. 3). The condition can generally be differentiated from a neoplasm by the history, as well as by the physical signs.

Spondylitis.—Spondylitis, or inflammation of the vertebral column, is a rather special condition characterized by a certain type of periosteal exostosis. The typical lesion is a ventral "spur" or bridging effect on the ventral surfaces of the bodies of the vertebrae at the intervertebral spaces (fig. 4).

This condition is classically called "spondylitis deformans ossificans" or a deformative ossifying spondylitis. The condition progresses until complete ankylosis and ossification between the vertebral joints occurs. Spondylitis generally appears in the lumbar or in the terminal thoracic vertebrae and, occasionally, in the cervical region.

Compressions. — Compressions of the spinal cord may be classified as extravertebral and vertebral. Extravertebral compressions are lesions which originate in structures around, or adjacent to, the vertebral column. The pressure which they exert on the vertebrae over a long period may cause necrosis of vertebral bone. This in turn can cause pressure on the spinal cord. Such lesions may be tumors, abscesses, cystic formations, and aortic aneurysms.

Fig. 5—Fractured body of the axis (arrow) of a dog, lateral view.

Fig. 6—Fractured body of the axis (arrow) of a dog, ventrodorsal view.

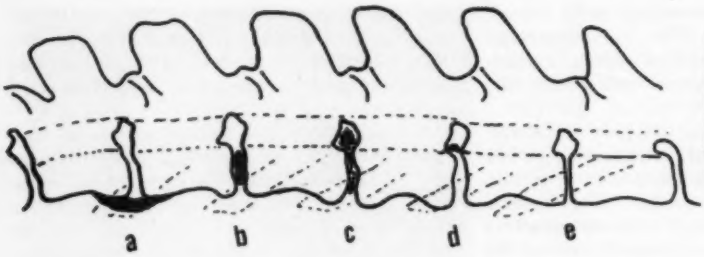

Fig. 7—Sketch of intervertebral disc lesions—spondylitis (a); calcified nucleus pulposus in nonprotruding disc (b); calcified disc protrusion (c); dorsal osteophyte formation (d); narrow disc space (ruptured disc) (e).

The extravertebral compressions can generally be seen by normal contrast myelography when two views are taken, lateral and VD. In case the affected soft tissue is not clearly seen in the radiograph, it may be necessary to make a "contrast" myelogram.

Vertebral Fractures and Luxations.—These conditions can usually be diagnosed by the normal contrast spinogram. In order to demonstrate minor or less marked lesions, it is important to center the x-ray field over the suspected lesion. Here again, both lateral and VD views are essential, in order to best observe the displacement for diagnostic and prognostic determinations (fig. 5, 6).

Intervertebral Disc Lesions.—These comprise a large portion of the lesions identified by clinical spinal radiography in the dog. They occur frequently in the susceptible breeds. They can be tentatively diagnosed by physical examination, but positive diagnosis depends on radiographic examination.

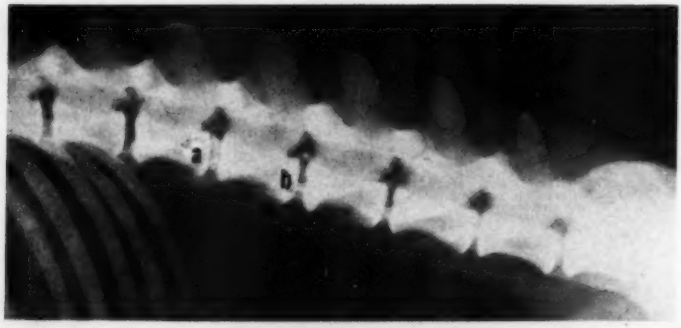

Fig. 8—Intervertebral disc lesions in a dog, lateral radiograph—calcified nonprotruding disc (a) and dorsal osteophyte formation (b).

The changes in the intervertebral disc that may be seen are as follows:[9,14] (1) the calcification of the nucleus of the disc; (2) a calcified protrusion of the disc; (3) a

Fig. 9—Radiopaque material administered in the subarachnoid space demonstrates a total blockage of flow at T 10-11 in the spinal column of a dog. A normal spinogram showed no visible lesion.

fibrous or calified mass which may lie in the spinal canal and which can be superimposed on an intervertebral foramen; (4) narrowing of the intervertebral disc space; and (5) osteophyte formation of the adjacent vertebrae (exostosis on the dorsal vertebral borders (fig. 7, 8).

Calcification.—Calcification of the nucleus of the intervertebral disc is generally not considered to be of clinical importance. It indicates that there has been a degeneration and death of tissue in the structure. The majority of these lesions do not cause any pressure on the cord.

However, calcification of a disc protrusion, especially when associated with a hypersensitive area as observed by physical examination, can be a highly significant diagnostic finding. The same holds true for a mass of hard or calcified tissue seen in the spinal canal or in the area of the intervertebral foramen. The occurrence of osteophytes of the adjacent vertebrae indicates that there has been an injury and that "nature" is making an attempt to repair the damage.

Narrow Intervertebral Spaces.—This condition indicates that something has happened to the substance of the disc. Due to its structure, this is generally a rupture through its dorsal portion. The ruptured disc then places pressure on the spinal cord, interfering with normal nervous function. The finding of a narrow space accompanied by a hypersensitive area is of diagnostic importance.

The above lesions are found in normal contrast spinograms and one or more occur in the majority of intervertebral disc cases. Occasionally, no change can be seen and further steps must be taken in order to make the proper diagnosis. This usually consists of contrast myelography.

Fig. 10—Osteogenic sarcoma of T 12, T 13, and L 1 in the spinal column of a dog. Neoplasm is indicated by small arrows.

Such conditions as an acute rupture of an intervertebral disc or concussion myelitis will cause a generalized swelling, hemorrhage, and edema of the cord. Occasionally, no radiographic evidence of damage is seen in the normal spinogram. But when a contrast medium is given, it fails to migrate caudally because of obliteration of the subarachnoid space from edema and swelling of the cord (fig. 9).

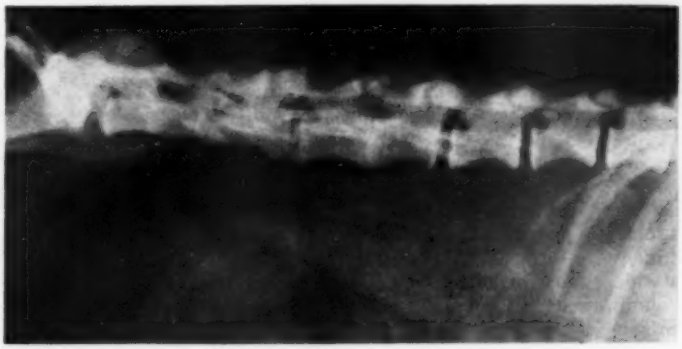

Fig. 11—Spinal column of a dog, showing fused lumbar vertebrae L 7, 6, 5, and L 4, 3. The L 2-3 disc space has a calcified nucleus pulposus.

Tumors.—Tumors of the spinal cord, meninges, and of the vertebral column can generally be diagnosed by normal contrast radiography. Tumors of the bony structures usually show proliferation and, in many cases, a lysis of bone (fig. 10). Tumors of the spinal cord or the meninges may have relatively the same density as

that of the parent tissue. Therefore, contrast myelography may be a necessary step in the clinical diagnosis of these lesions.

Malformations.—Malformations of the spinal cord or column occur infrequently; however, radiographic examination of the lesions may be necessary to establish a clinical diagnosis. I have observed fused, misplaced, and absent vertebrae (fig. 11). These conditions are generally diagnosed by normal contrast radiography.

A condition such as dural ossification or so-called "pachymeningitis ossificans" is generally not diagnosed by positive radiographic findings. Occasionally, a bony plaque may be superimposed on an intervertebral foramen. In this case, it may be seen on a radiograph. If such is not the case, a tentative diagnosis can be made by the absence of radiographic findings, due to the fact that most conditions causing this type of clinical picture will have a positive radiographic lesion; e.g., fractures and luxations. Therefore, it is concluded that some conditions can be diagnosed by the absence of radiographic lesions rather than by their presence.

SUMMARY

An effort has been made to demonstrate the importance of spinal radiography in the proper diagnosis of many clinical conditions in the dog.

A radiographic examination may contribute to the diagnostic procedures in the following conditions: dural ossification or pachymeningitis ossificans; generalized myelitis from concussion or acute ruptured disc; osteomyelitis of the spinal column; spondylitis; extravertebral compression such as tumors, abscesses, and cysts; vertebral compression such as fractures, luxations, and intervertebral disc protrusions; tumors of the spinal cord or the meninges; tumors of the spinal column; and the various malformations of the spinal column such as fusions and absent and misplaced vertebrae.

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Portals for Pleural Cavity Fluid

The pleural capillaries from which fluid passes to the pleural cavity in the dog may be part of the pulmonary circulation. They may contain two types of pores: larger ones which allow free passage of plasma protein but which restrict passage of cells, and smaller ones which are impermeable to protein.

Low molecular weight substances pass rapidly in either direction.—*Vet. Bull. (Jan., 1959): Item 244.*

Cow Survives Six Weeks Without Food

A cow in South Africa was lost soon after she was bought, and an extensive search failed to find her. Six weeks later, she was found 100 yards from the farmhouse in a hole which showed evidence that she had been there all that time.—*Vet. Rec., 70, (July 5, 1958): 556.*

Radiographic Anatomy of the Feline Skull

W. C. D. HARE, Ph.D., M.R.C.V.S.

Philadelphia, Pennsylvania

THIS PAPER is a sequel to an earlier paper on the radiographic anatomy of the canine skull.[2] Since most veterinarians are probably more familiar with the anatomy of the canine than the feline skull, it is perhaps appropriate to mention briefly a few of the more striking differences in the latter.

In profile (fig. 1, 4, 5), the dorsal surface of the feline skull is uniformly convex from the external occipital protuberance to the rostral* end of the nasal bones. The cranial part of the skull is well developed; however, the facial part is deep dorsoventrally and short rostrocaudally, with the result that the orbit is in a more rostral position than in the dog, and the infraorbital foramen is situated dorsal to the root of the second cheek tooth.

The zygomatic process of the zygomatic bone presents a postorbital process so that the orbital margin is more nearly closed in the cat than in the dog and, in a few cases, may be complete.[4] The tympanic bulla is well developed, and the external acoustic meatus is large though not encircled by a bony external acoustic process. The jugular process does not extend as far ventrad as in the dog.

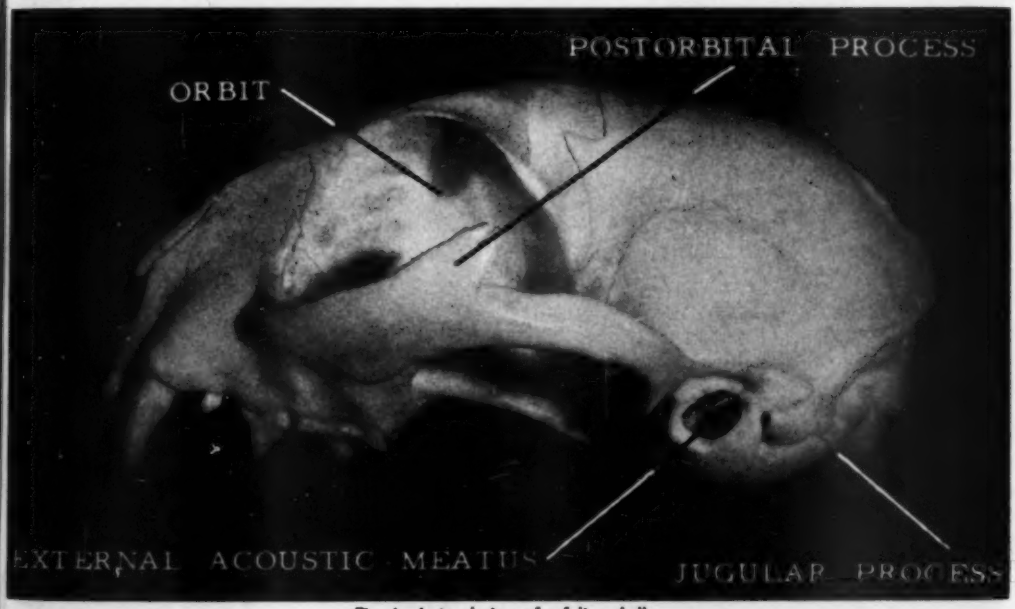

Fig. 1—Lateral view of a feline skull.

On a ventral view (fig. 2, 6, 7), the most striking feature is the width of the skull through the zygomatic arches. The zygomatic process of the zygomatic bone is well developed, a feature that is even more pronounced in an entire male.[5] The palatine fissures are small and rounded.

On a rostrolateral view (fig. 3), it can be

From the School of Veterinary Medicine, University of Pennsylvania, Philadelphia.

*Rostral denotes a position relatively near the front end of the head.

The author acknowledges the advice of Dr. D. G. Lee and his colleagues in the anatomy laboratory, and the cooperation of Dr. W. H. Rhodes of the Department of Radiology; he also thanks Mr. Adolph Marfaing, F.B.P.A., of the Wistar Institute, for his photographic work.

seen that the orbit and orbital margin are large and that the latter is circular in outline. The orbital axes are directed more rostrad than in the dog, so that the angle of divergence between the optic axes is only 10 to 15 degrees whereas, in the dog, it is 30 to 52 degrees.[4]

The interior of the feline skull has the following features (fig. 4, 5). The occipital fossa of the cranial cavity is large and the tentorium ossium is well developed. In the nasal cavity, the ethmoturbinate bones are large and extend rostrad as far as the bony entrance to the nasal cavity, thereby completely separating the nasoturbinate and maxilloturbinate bones.

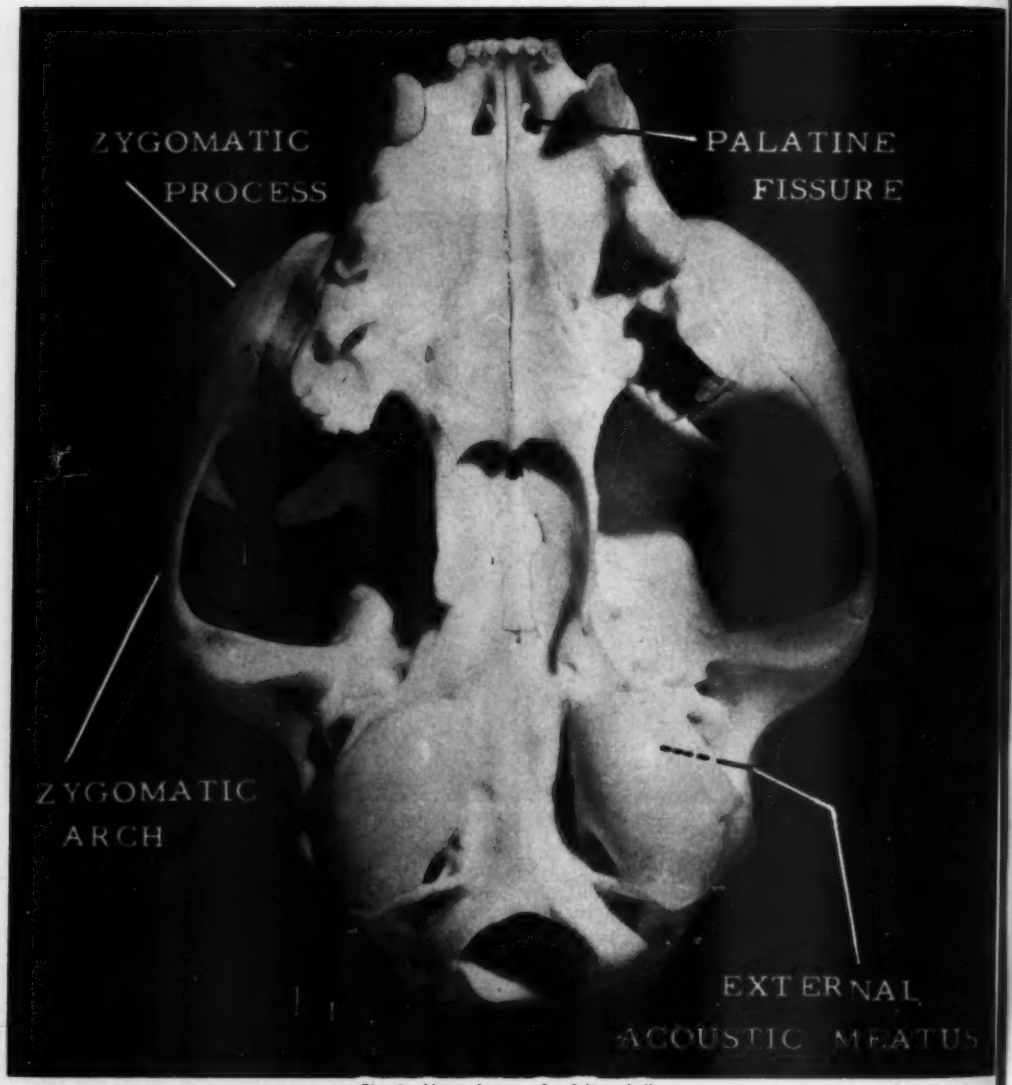

Fig. 2—Ventral view of a feline skull.

In the caudodorsal part of each nasal fossa, there is a small diverticulum situated rostral to the frontal sinus and dorsal to the ethmoturbinate bone, some of the scrolls of which partially occupy and close it ventrally. This diverticulum has been called the frontonasal sinus[1] or the external frontal sinus.[2] The frontal sinus is similar to that of the dog and communicates with the nasal cavity through the diverticulum mentioned previously. The maxillary sinus is absent in the cat, but there is a well-developed sphenoidal sinus in the body of the presphenoid bone.

The cat has four cheek teeth in each side of the upper jaw, of which the first three are premolars; and three cheek teeth in each side of the lower jaw, of which the first two are premolars. The roots of the last two upper cheek teeth on each side lie just ventral to the orbit.

The subject used to obtain the roentgenograms for this paper was a 1-year-old striped queen. She was anesthetized with a barbiturate and her head was positioned as illustrated for the dog in the earlier paper: that is, for the ventrodorsal view, the ventral surface of the lower jaw was placed so that it was parallel with the film, the central ray being perpendicular to the film and directed to the body (basihyoid bone) of the hyoid bone; and for the lateral view, the sagittal plane of the head was parallel with the film, the central ray being perpendicular to the film and directed to the middle of the zygomatic arch. Parspeed

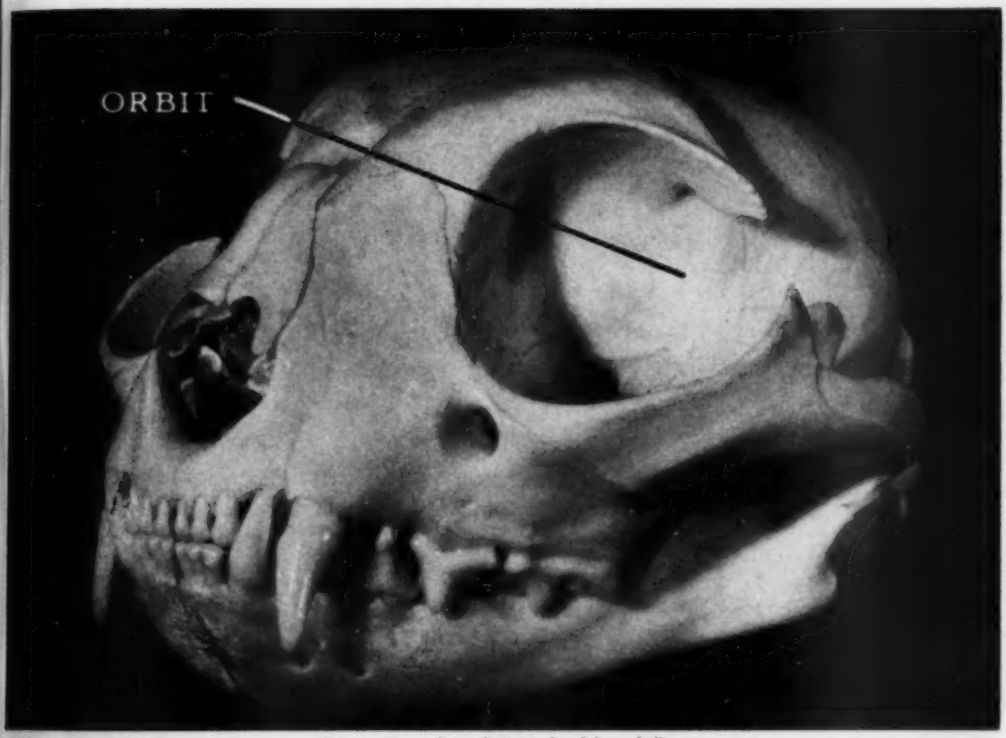

Fig. 3—Rostrolateral view of a feline skull.

Fig. 4—Lateral view of the head of a 1-year-old queen.

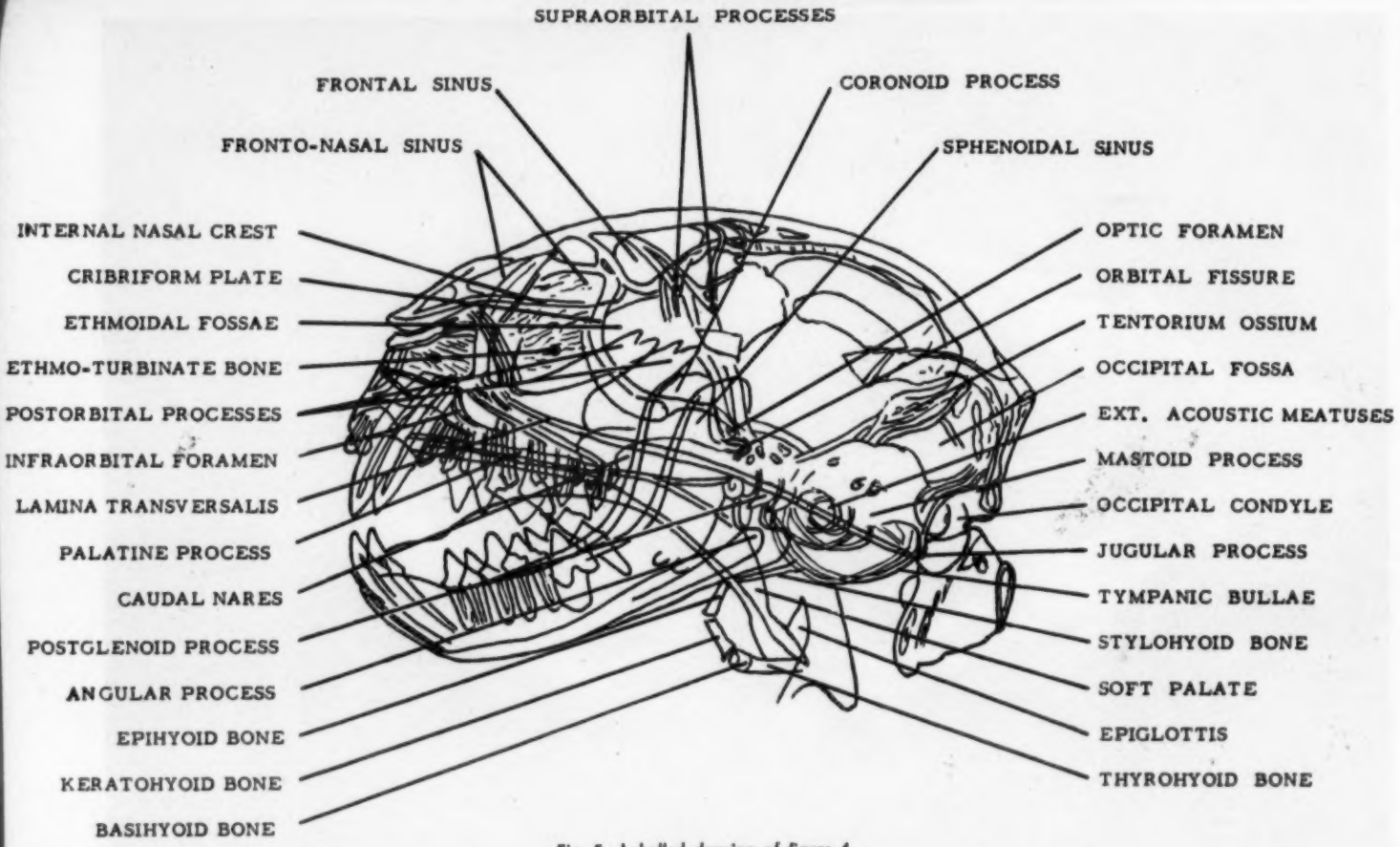

Fig. 5—Labelled drawing of figure 4.

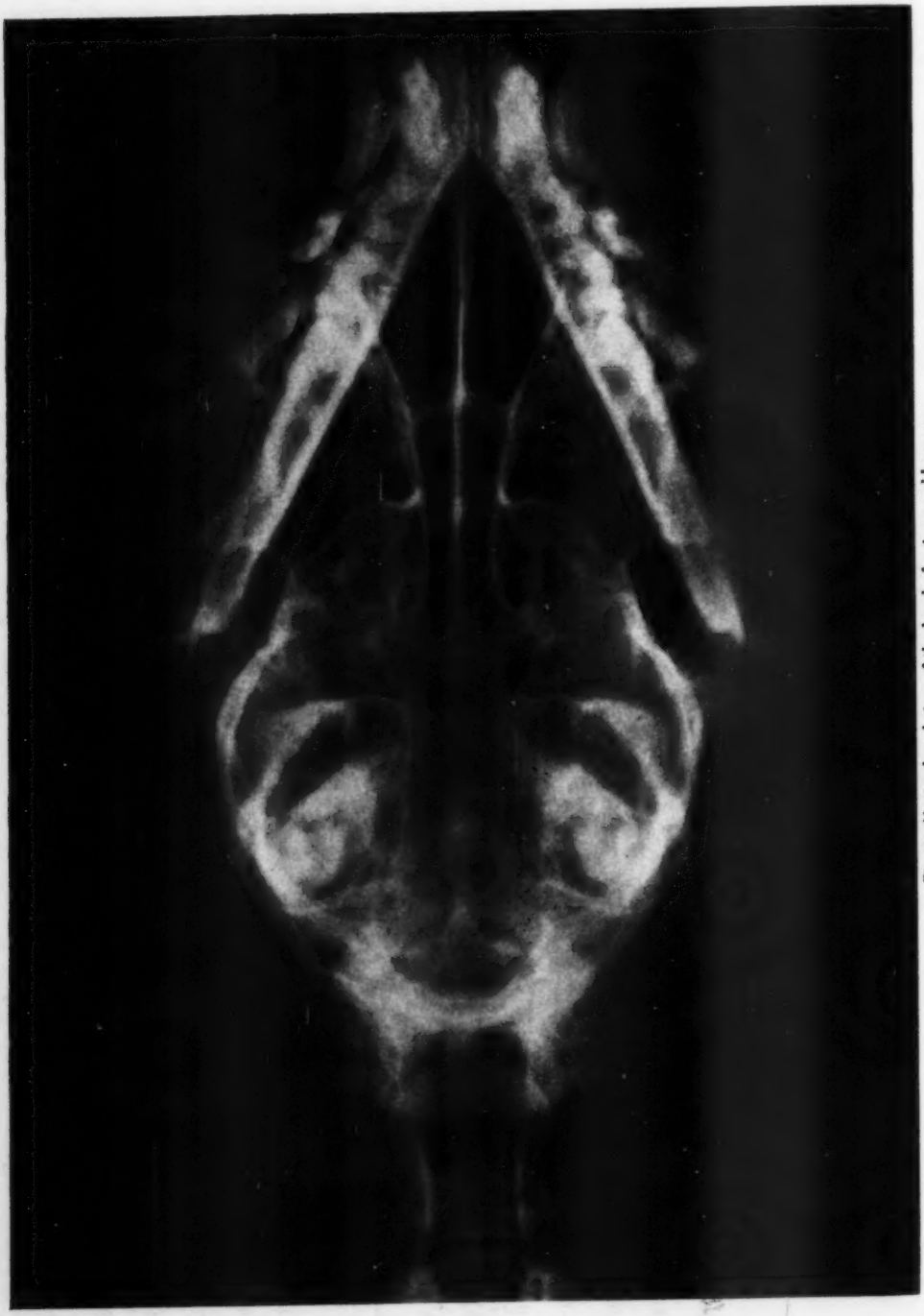

Fig. 6—Ventrodorsal view of the head of a 1-year-old queen.

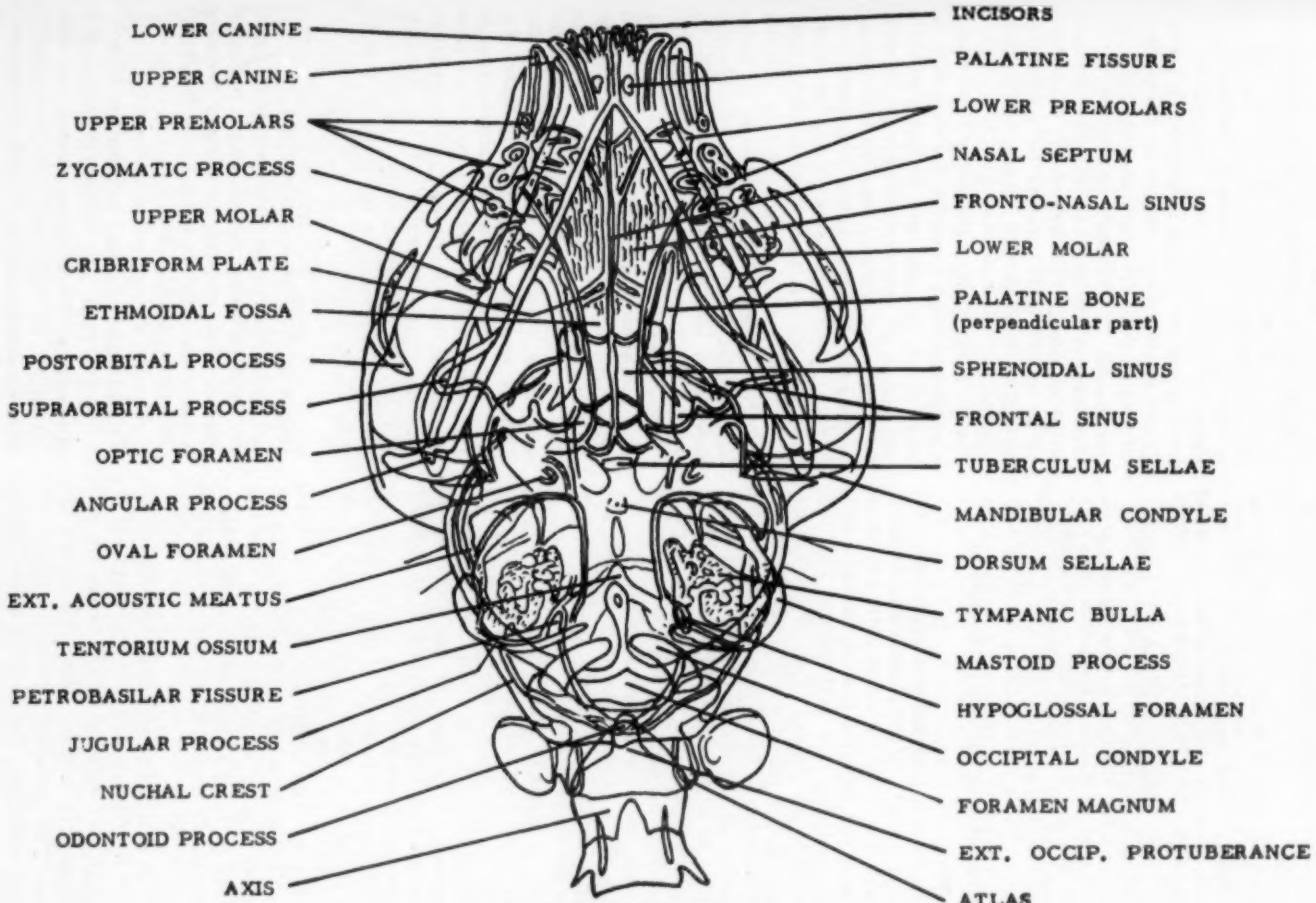

Fig. 7—Labelled drawing of figure 6.

screens and regular film were used without a grid at a focal-film distance of 35 inches.

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Pleuropneumonia-like Infection in Swine

The swine pleuropneumonia-like organism (PPLO), *Myco-plasma hyorhinis*, is a small filter-passing agent with a minimal cell wall and requires protein-enriched artificial mediums for cultivation. This requirement for certain types of protein enrichment may reflect a deficiency in protein synthesis due to the deficient cell wall. This organism is usually cultivated in artificial medium or in chicken embryos for study in the laboratory. It is relatively plastic, which may account for some of its ability to pass bacteria-retaining filters. In addition, there is some variation in size. The small elements are more readily filtered than the large elements.

This is the only PPLO known to be a common inhabitant of swine nasal cavities, where it has been found to occur in approximately 60 per cent of the swine examined, regardless of the presence or absence of turbinate atrophy. It is common in pneumonic swine lungs.

The present concept is that damage to the respiratory tract, either atrophy of the turbinates or pneumonia, allows the invasion of the organism into the blood stream. When a septicemia occurs, the organism has a marked affinity for the serous surfaces of the body, *i.e.*, the pleura, peritoneum, pericardium, and synovial surfaces.

It is possible to reproduce the septicemic stage by intravenous or intraperitoneal inoculation of cultures of the organism with its resultant localization on the serous surfaces. The greatest affinity is shown for the pericardium followed, in order, by the pleura, the peritoneum, and joint surfaces. Some strains have more affinity for joint surfaces than others.

With this background of information, it is not at all surprising that the usual pattern of disease produced by *M. hyorhinis* is the sporadic occurrence of pericarditis, pleuritis, peritonitis, and arthritis in a limited number of pigs in a herd. This syndrome almost always occurs in association with either severe turbinate atrophy or pneumonia. It has been impossible up to the present time to produce pneumonia with cultures of this organism; it appears to be a secondary invader of pneumonic lesions produced by other etiological agents.

We occasionally encounter a second disease syndrome in which the organism is much more invasive and produces numerous cases of acute septicemia associated with stiffness and lameness. This is usually confused with acute swine erysipelas.

One of the darkest aspects of *M. hyorhinis* infection is that there is no reliable serological test to detect carrier animals and the organism appears to be so widespread that when we do have an adequate serological test it may not be feasible to eliminate all carriers.

This organism is resistant to many of the antibiotics and sulfonamides. With certain of the broad-spectrum antibiotics, at levels approaching the maximum attainable in swine, we can demonstrate some inhibition; however, this is expensive therapy and not entirely satisfactory for field use. One interesting observation is that sulfathiazole appears more effective against *M. hyorhinis* than either sulfamethazine or sulfamerazine.—*W. P. Switzer, D.V.M., Ph.D., Ames, Iowa, at the 75th Annual Convention of the Indiana V.M.A., Jan. 14-16, 1959.*

Inclusion Bodies in Distemper

Dogs with canine distemper were found to have inclusion bodies which contained specific viral antigen in their circulating neutrophils.—*R. M. Cello et al. in Cornell Vet. (Jan., 1959): 127.*

Trichomonas Foetus in Healthy Uteri

Of 432 cows and heifers slaughtered in Yugoslavia, *Trichomonas foetus* was demonstrated in the uteri of 3 apparently healthy cows, and in 4 with pyometra.—*Vet. Bull. (Jan., 1959): Item 61.*

Respiratory Problems in Swine

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RESPIRATORY PROBLEMS in swine are much more prevalent and have greater significance throughout the year than many veterinarians realize. It is not uncommon to have heavy losses in hot weather as the result of lung involvement.

Commonly, the farmer drives the hogs out of the shed for the veterinarian to look at when he comes on the premises. However, there is considerable advantage in leaving the herd undisturbed so they can be observed lying quietly wherever they are. Under such circumstances, it is easier to get an over-all picture of the type of breathing. After observing them in their bed, they can be roused, and coughing, sneezing, and other physical manifestations will be evident. The same procedure holds true with both baby pigs and older swine.

If the sanitation on the premises is lax, one of the first respiratory problems to show up in baby pigs is due to infection of the lungs by larval ascarides.

EPERYTHROZOONOSIS

This disease may affect baby pigs and the resulting anemia may cause respiratory distress. In this case, as well as in the case of nutritional anemia, the lungs and other parts of the respiratory system are not involved.

ATROPHIC RHINITIS

Starting in baby pigs, this disease frequently is a major problem on premises, causing sneezing and degenerative changes in the nasal chambers, with frequent epistaxis. Lung complications often follow due to inhaled debris from the nasal chambers.

Apparently more than one type of infection or combination of infections will cause turbinate atrophy. It was recently reported* that there are three major causes of these lesions: *Pasteurella multocida, Brucella bronchisepticus,* and a large filter-passing organism. Also, certain chemicals will cause the lesion. Fortunately, not all animals exposed to the various causative factors will develop exaggerated lesions. Although some animals may remain carriers of the infection for a considerable period, others do not transmit the disease.

It appears that the best method of eliminating this disease in any herd is to isolate sows and their pigs until they are about 4 weeks old. Any litter, where sneezing or other indications of the infection develop in the pigs, should be disposed of without further exposure to the apparently healthy litters.

LUNG LESIONS

Two types of lung lesions, hepatization and edema, need careful consideration:

Hepatization.—This lesion is characterized by an organized exudate in the air passages and appears as a solid area that stands out in the deflated lung. The pleura over the area is often inflamed and shows an exudate. The lesion progresses through distinct stages which we recognize as congestion, red hepatization, gray hepatization, and resolution or degeneration and necrosis.

The lung may contain several organized areas in different stages of hepatization, giving it a marbled appearance. Early writers referred to this as catarrhal, bronchial, or lobular pneumonia, and *swine plague.* Usually it requires about a week for this course to be completed, regardless of what is done once the exudate becomes organized. It is important to remember this because whatever treatment is used, the lungs will not clear until the process has passed through the different stages.

The terminal stage of hepatization is a critical one. If resolution does not take place, degeneration and necrosis follow. Abscess-like lesions develop and the animal becomes unthrifty, with a chronic cough and abnormal breathing, depending on the extent of lung lesions and pleuritic adhesions. The lesions may be surprisingly extensive, yet the animal may remain on feed and gain fairly normally until it is forced

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to exercise beyond its lung capacity. When this occurs, it may collapse and die. The extra fatigue incident to loading or shipping to market or to fighting may be fatal.

Treatment of this type of pneumonia is seldom spectacular because of the chronic course. However, specific antibiotic and antiserum therapy may help control the infection and prevent the formation of new hepatized spots. The medication must be prolonged for a week or more before the lesions reach the regeneration stage. In the case of mechanical pneumonia, the treatment is apt to be of little or no avail.

PASTEURELLOSIS

The principal cause of hepatized lesions in the lungs of swine is infection with one or more of the pasteurellas. These organisms play a prominent role in the disease processes of swine and cause considerable loss.

The prevalence of pasteurellosis seems to vary from year to year and the acute disease may be encountered without respiratory involvement. However, as the disease runs its course in a herd, it becomes less acute and pneumonia takes its usual toll. The infection may be latent in the lungs or nonpathogenic types may be cultured on occasion.

MECHANICAL PNEUMONIA

This usually is a hepatized type. Any foreign material in the air passage such as inhaled dust, especially powdered straw bedding, may produce sufficient irritation to initiate the lesion. Dry dips used too promiscuously and other misdirected medicaments are a common cause of trouble.

Various bacterial invaders complicate the mechanical pneumonia. When *Pseudomonas aeruginosa* is present, the prognosis should be unfavorable.

Edema.—In this condition, the exudate is in the tissues of the lungs and the air cells are collapsed rather than filled with exudate. It is the most common lesion encountered in the lungs of swine and does not become organized. Therefore, it may begin to clear soon after forming if the cause is removed and complications are controlled.

It is not uncommon to find a combination of hepatized and edematous areas in the same lungs. A necropsy will be needed to make the diagnosis; in such complicated cases, the prognosis is not favorable.

In the early stages of pulmonary edema, the fluid is present throughout the organ. However, as time passes it settles to the pendant parts, leaving the upper areas of the lobes practically normal. The lower air spaces will be completely compressed and nonfunctioning. The gravitation of the exudate usually occurs 36 to 48 hours after the onset.

Clinical signs vary with the stage of edema. In the initial stage, where the lungs are considerably involved, the animal will breathe rapidly or "pant." In hot weather, this may be considered due to the heat rather than to illness. As the general edema of the lungs clears by settling to the pendant parts, the breathing becomes jerky or the animal will be referred to as "thumping." The rate of respiration at this time will depend on the amount of lung that is not functioning. An exaggerated thumpy breathing will result if considerable lung involvement is present and especially if pleuritis becomes a factor.

STREPTOCOCCIC AND CORYNEBACTERIAL INFECTIONS

Certain streptococci may cause hepatization of the lungs in swine but these organisms are more apt to be associated with pulmonary edema.

Edema of the lungs is associated with numerous infections, most frequently with streptococci and corynebacteria. The former is a common factor in acute cases and may become generalized and fatal before the lung lesions begin to clear up. Pigs 2 or 3 weeks old will often develop lung complications along with streptococcic navel infection and arthritis. An occasional pig no more than 3 or 4 weeks old with streptococcic pneumonia will show vegetative endocarditis. These must be differentiated from the so-called "cauliflower-like" valves associated with swine erysipelas. However, the writer has never observed a swine erysipelas lesion in the heart of such a young pig.

Corynebacteria may be the cause of acute edema of the lungs, and cultures will be required to differentiate it from streptococcosis. Also, it is not uncommon to find the two organisms in the same lesion. Invariably, corynebacteria are prevalent in chronic and suppurating lesions of the lungs of swine. *Corynebacterium pyogenes* is a frequent culprit in such cases. This

organism produces a potent hemolytic toxin and is a major debilitating factor when present.

Swine with relatively insignificant lesions in the pendant lobes of the lungs, in which corynebacteria are present, often are victims of a chronic toxemia which keeps them in an unthrifty condition. These animals often develop a diarrhea, the cause of which cannot be accounted for at necropsy unless the lung lesions are considered a primary source of the trouble.

Pigs with acute streptococcic and corynebacterial infections usually respond to early treatment with antibiotics, especially the long-acting types. For best results, the medication must be given during the first 36 hours, prior to the settling of the edema fluids and collapse of the pendant parts of the lung.

SWINE ERYSIPELAS AND SALMONELLOSIS

Edema of the lungs is a primary lesion in some cases of acute swine erysipelas and often the pigs that die first in the herd will show marked edema of the lungs. Certain signs and lesions help differentiate this disease from others with similar lung lesions, but laboratory cultures may be necessary to verify the diagnosis.

Anti-swine erysipelas serum and antibiotics are specific treatment for pigs with acute infection.

Occasionally, pigs with acute salmonellosis will manifest acute edema of the lungs before enteric lesions appear. Necropsy and cultures are needed to confirm such a diagnosis. Otherwise, the treatment is apt to be disappointing because Salmonella are not controlled by a number of agents discussed previously.

BRUCELLA BRONCHISEPTICUS INFECTION

This is a common cause of a chronic degenerative type of edema of the lungs in swine. The infection seems to persist on premises, and recovered gilts may be carriers and infect their litters. Pigs 3 or 4 weeks old may develop this infection and with it the characteristic "whooping cough." This might be termed porcine whooping cough, since *Br. bronchisepticus* cross immunizes with *Hemophilus pertussis*, the cause of whooping cough in children.

The infection may cause trouble in feeder-type pigs but is less common in older swine. It is better known as a common cause of acute and chronic pneumonia in dogs, and as a frequent complicating factor in canine distemper. Also, it is a cause of acute septicemia and death in pups. No reports have been found where the infection was suspected as being transmitted from dogs to swine or vice versa. It probably could happen.

Cultures are necessary for the identification of *Br. bronchisepticus* infection. The organisms may persist on premises and plague one pig crop after another with a chronic type of lung lesion. If such a farm is recognized, the pigs may be inoculated with a *Br. bronchisepticus* bacterin. Many veterinarians have used the stock-mixed bacterin (Canine Formula I) in baby pigs prior to the age when they usually begin to show signs of infection on a particular farm. This product seems to help stop the spread of the infection and some think it stimulates recovery in sick individuals. Certain of the broad-spectrum antibiotics help control this organism but it is resistant to many of the more commonly used agents.

SWINE INFLUENZA

Hemophilus suis may cause some lung edema but ordinarily it does most harm when in company with influenza virus. Certain viruses are associated with edema of the lungs. Influenza virus alone produces but little disturbance in the lung. However, when it is symbiotic with *H. suis*, as in influenza, extensive lesions may result. This has been considered primarily a fall and winter disease with a high morbidity but low mortality. In recent years, we have been experiencing peracute influenza in swine in the summer months and a high mortality may follow. The hot weather seems to aggravate the condition. The lung capacity of swine is not developed to cope with hot weather and, when edema interferes, the result may be asphyxiation.

Some pigs develop a generalized *H. suis* infection, which may be fatal without much lung involvement. It is necessary to resort to a cultural examination of the tissues to determine the exact bacterial offender in these cases.

The onset of the disease is sudden in the individual animals and a number may show infection simultaneously. In pigs with peracute cases, breathing is rapid and the ani-

mal may become restless as the condition progresses. Forced exercise may be fatal. Prompt antibiotic therapy, especially with combination of large doses of aqueous penicillin and procaine penicillin in oil, have given excellent results overnight. However, if treatment is delayed for 36 to 48 hours, the course of the disease will be drawn out and some individuals continue a thumpy breathing for several days or longer.

When influenza virus is symbiotic with Pasteurella infection, the course of the disease is apt to be prolonged and more often fatal than the usual influenza infection. The animals frequently will show the usual influenza syndrome where most of the herd is affected but extensive lung involvement is not always apparent. About the third or fourth day, when the animals would be expected to begin to recover, they become more acutely ill and mortality may be high from a combination of pneumonia and septicemia.

These pigs do not respond so well to treatment. No doubt the lung lesions play a part in prolonging the trouble, as hepatized areas, along with edema, may prevail.

This was the worst type of influenza to cope with until we encountered the acute cases in the summer months. The writer has not seen the Pasteurella complication with influenza virus in the summer.

AUJESZKY'S DISEASE

Pseudorabies in swine may cause a simple rhinitis with mild edema of the lungs. Also, this virus is apt to involve the central nervous system of some of the pigs, especially if they are young. This would help to differentiate it from the mild cases of influenza. Animal inoculations may be necessary to prove the existence of the pseudorabies virus in pigs, as they are often either inapparent carriers or the clinical signs are not credited to this infection.

If the disease is recognized as a fatal malady in baby pigs, a dose of about 10 cc. of anti-hog cholera serum is indicated. It has been found that most of the anti-hog cholera serum produced in the Middle West contains a high antibody content against pseudorabies virus. Usually, it is sufficient to control the infection or prevent many deaths.

VIRUS PNEUMONIA OF PIGS

This has become a major disease of swine in this and many foreign countries. One British authority thinks that the control of virus pneumonia of pigs ranks next in importance to tuberculosis eradication. Also, in that country, an association for the advancement of virus pneumonia-free pigs has been suggested. Many producers in the United States would endorse both of these ideas.

Virus pneumonia of pigs is an insidious disease and secondary bacterial complications exaggerate and prolong the course. It does not seem to be as prevalent in Illinois as is reported from some other states.

ALLERGIES AND POISONING

Allergy plays an important role in causing acute edema of the lungs of swine. Animals that have been sensitized to some foreign protein may react violently to further injections of that protein, and edema of the lungs may be a primary lesion in such a reaction. Occasionally, this may result from repeated doses of anti-swine erysipelas serum. The reactions are more apt to occur when the third or fourth dose is given, if the intervals between doses have been a few weeks to several months. It may be fatal.

An acute edema of the lungs in sows about farrowing time seems to be of an allergic nature. Frequently these animals are found in distress out on pasture or away from shelter. If they are forced to exercise, even a small amount, it is apt to be fatal as the lung capacity has been so completely reduced. Treating these animals has not been very successful. Absolute rest and shade is necessary in summer and antihistamines seem to help if given early in the course of the trouble.

Certain poisons may cause edema of the lungs of swine. One source of such a poison is rats killed with ANTU. If pigs eat the poisoned rats, they too become poisoned and develop the lung lesions.

PARASITES

Parasites invade the lungs of swine and predispose the animal to local infections of various types. Ascarid larvae are frequent offenders, especially in young pigs. However, even in older animals, finding numerous shotlike nodules in the lung tissue should cause one to suspect these worms. If secondary bacterial infections develop, the lesion is extended and not so characteristic. It is necessary to demon-

strate the parasite under the microscope to prove the diagnosis.

Lungworms are much more prevalent in swine than we realize, especially on some farms. They not only produce local lesions and predispose the invaded area to bacterial infections, but they also appear to be extremely toxic to the host. Their life-cycle, involving a passage through the earthworm, makes them difficult to control, as the lungworm larvae may live and be infective for as long as three years in the earthworm. Some earthworms are said to live for seven to ten years. The parasitism in this case may be a minor factor economically as compared with the ravages resulting from virus diseases which are harbored by the lungworm larvae which had their origin from swine infected with influenza or hog cholera.*

THROAT INFECTIONS

A high percentage of hog heads are condemned in meat-packing plants because of abscesses involving the lymphatics of the throat region. Some may produce sufficient pressure to interfere with respiration. Streptococci have been designated as the principal cause of the lesions; however, an Actinomyces plays a part on many farms. In the latter cases, organic iodine therapy is indicated. A course of such medicated feed will do much to control the trouble on a farm.

A diseased carcass or contaminated feed may be the source of an infection that will invade the throat region of swine and interfere with respiration or suffocate the animal if sufficient edema develops. The tonsils seem to be the principal portal of entry.

Anthrax is the first disease to consider if swine are observed with a swelling of the throat region and haying difficulty breathing. Many times they will be sitting "dog fashion" on their haunches, struggling for breath. It is imperative that a positive diagnosis be obtained on these animals.

Both Streptococcus and Pasteurella organisms have been found in edema lesions involving the throat and base of the tongue. The tongue may be greatly swollen.

Anaerobic gas-forming organisms such as *Clostridium septicum* invade the throat region of swine on occasion. These may gain entrance to the tissue through abrasions from eating bones, as well as through tonsils.

Most of these throat infections may be treated successfully with some of the antibiotics if administered early in the course of the disease.

Veterinarians are urged to become better versed in diagnosis and treatment of respiratory complications in swine. The swine industry certainly needs your help.

*Shope, R. E.: Hog Cholera Eradication. J.A.V.M.A., 134, (Feb. 1, 1959):143.

Virus Pneumonia in Children and Pigs

In July, 1957, 18 children in six families in the Netherlands developed fever (up to 104.9 F.) and sore throat which lasted three or four days. They had been exposed to pigs with virus pneumonia two to three weeks previously. A Coxsackie virus, group A, type 5, was repeatedly isolated from the lungs of 2 pigs, and the serum from the convalescing children showed high neutralizing index to this strain. The strain was originally pneumotropic but after three passages it was myotropic for suckling mice. Intranasal inoculation of infected mouse carcass suspension resulted in virus pneumonia and specific antibody in healthy pigs.—*J.Am.M.A., 168, (Nov. 29, 1958): 1825.*

Uses and Misuses of Corticosteroids in Ophthalmology

The indiscriminate use of corticosteroids, either independently or in combination with antibiotics, may lead to a decrease in resistance and reparative processes, may spread the infection and, in many instances, may lead to the need for removal of the eyeball.

Their use is contraindicated in corneal ulceration, and they are ineffective in such conditions as glaucoma, cataracts, and degenerative diseases (including corneal dystrophies and retinal atrophies). However, for the relief or treatment of most other ophthalmic conditions, they may be employed safely and with the hope of achieving good end results. Relapses of chronic inflammatory processes may be expected after they are discontinued.—*W. G. Magrane, D.V.M., M.Sc. (Med.), Mishawaka, Ind., at the annual meeting of the Indiana V.M.A., Jan. 28, 1959.*

Report on Zoonoses

The following items are from reports, *Morbidity and Mortality*, issued weekly by the U. S. Department of Health, Education, and Welfare.

Rabies.—Six persons died of rabies in the United States during 1958. They were a 4-year-old boy and a man, both bitten on the face by dogs; a woman bitten on the fingers by a fox; a boy of 10, whose dog had died after a clinical diagnosis of rabies two weeks previously; a woman in California, bitten nine weeks previously by a rabid bat and treated with serum and vaccine (*see* Nov. 29), and a man in South Dakota (details not yet available).—*Jan. 3, 1959.*

In Pennsylvania, rabies was confirmed in a chipmunk (from a city residential area) which had bitten a girl who was then treated with duck embryo rabies vaccine.—*Dec. 12, 1958.*

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Anthrax.—During 1958, 15 cases of human anthrax were reported—seven in Arkansas, three in Pennsylvania, two each in Louisiana and Massachusetts, and one in Mississippi. Those in the Mississippi Valley states were in rural areas where there was anthrax in livestock. Of the seven cases in Arkansas, four were in children including girls 3 and 5 years old.—*Dec. 30, 1958.*

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Encephalitis.—In Kansas, during 1958, there were 47 confirmed cases of Saint Louis encephalitis (2 deaths) and 16 of western equine encephalitis.

In Utah, there were 120 suspected cases, of which 39 were confirmed as western equine encephalitis (1 death); eight other fatalities were clinically attributed to encephalitis.

In California, there were 38 confirmed cases of western equine encephalitis and 13 of Saint Louis encephalitis.

Anthropod-borne encephalitides were considerably more active in 1958 than in 1957 in western states, with a peak incidence in September.—*Dec. 30, 1958.*

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Leptospirosis.—In Connecticut, a man who had little contact with animals developed leptospirosis soon after swimming in a pool in a gravel pit. His agglutination titer for *L. icterohaemorrhagiae* increased from 1:16 to 1:2,048 and for *L. canicola* and *L. pomona* from 1:8 to 1:32 in a one-week period.—*Oct. 17, 1958.*

In Ohio, a farmer became ill, supposedly with influenza, and died in ten days after showing jaundice and a tender, palpable liver. His titers rose in three days from negative to 1:128 for *L. canicola*, and from 1:128 to 1:1,024 for *L. icterohaemorrhagiae*. Several weeks previously, he had nursed his sick dog which had a titer of 1:1,024 for *L. icterohaemorrhagiae.*—*Nov. 21, 1958.*

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Histoplasmosis.—In West Virginia, a man became ill one week after being showered with dust and debris when an old school building collapsed. Birds had occupied the upper story of the building. He had developed positive radiographic lesions in the chest, positive intradermal histoplasmin tests, and *Histoplasma capsulatum* was recovered from his sputum.—*Nov. 29, 1958.*

In Mississippi, eight children in a school developed mild to severe respiratory syndromes, with radiographic lesions typical of pulmonary histoplasmosis, after exposure to material taken from a blackbird roost to fertilize plants in the classroom.—*Dec. 5, 1958.*

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Tularemia.—In North Carolina, a hunter and his wife developed a fever and finger lesions, four and six days respectively, after dressing wild rabbits. When tested two weeks later, the man had a titer of 1:40 for *Pasteurella tularensis.*

In Iowa, a young physician developed an ulcer on the tip of his thumb and finger several days after he had necropsied a sick wild rabbit. His titer against *Past. tularensis* increased from 1:40 to 1:2,560 in two weeks but the organism was not recovered in three blood cultures and in cultures from the lesions.—*Jan. 9, 1959.*

Tuberculosis in British Animals

Of the last 3,934 bovine tuberculous specimens examined at the Central Veterinary Laboratory (England), 52 (1.3%) contained avian-type tubercle bacilli and 7 others contained the human type. With the rapid eradication of tuberculosis in cattle, the bovine-type organism is no longer the most common found in swine with tuberculosis. Of the last 64 tuberculous lesions found in swine at slaughter, 44 (69%) yielded tubercle bacilli of the avian type, and the other 20 yielded the bovine type.—*Brit. Med. J. (Jan. 3, 1959): 50.*

What Is Your Diagnosis?

Because of the interest in veterinary radiology, a case history and radiographs depicting a diagnostic problem are usually published in each issue.

Make your diagnosis from the picture below — then turn the page ▶

Fig. 1—Radiograph of stifle (mediolateral view) of the Terrier.

History.—A female crossbred Terrier, 6 years old, had been lame in the right hindleg for several months, but during the past two weeks the lameness had become so marked that she seldom touched the foot to the floor. The abnormality seemed to be confined to the stifle joint; significantly, however, she objected only slightly to manipulation of the bones at the joint. There was noticeable atrophy of the leg muscles, especially in the area of the quadriceps, and a clicking could be heard and felt as the joint was extended. The dog was anesthetized to facilitate taking a mediolateral, recumbent radiograph (fig. 1). When the joint was manipulated, the tibia could be made to slide forward and backward on the condyles of the femur.

Here Is the Diagnosis

(*Continued from preceding page*)

Diagnosis.—The dog's tibia was subluxated anteriorly with only the posterior portion of its condyles articulating with the femur. This malposition is diagnostic of rupture of the anterior cruciate ligament.

Comment.—The main function of the anterior cruciate ligament is to prevent the tibia from sliding forward on the femur. Normally, the position of the tibia in relation to the femur is maintained by a counterbalance of the anterior and posterior cruciate ligaments. Hyperextension, hyperflexion, and excessive rotation of the joint over a long period of time, causing chronic insult to the ligament, are given as causes for this injury. An inherited tendency toward underdevelopment of the ligament may also play a part.

If rupture of the anterior cruciate ligament is suspected, the animal always should be anesthetized in order to examine the joint by forward and backward manipulation of the proximal extremity of the tibia. The opposite stifle should always be manipulated and radiographed for comparison.

This report was presented by Drs. T. J. Lafeber, Jean Beckwith, and D. R. Strombeck, Niles Animal Hospital, Niles, Ill.

Fig. 2—Radiograph of stifle (mediolateral view) of the Terrier, showing relation of femur and tibia in normal position.

Our readers are invited to submit histories, radiographs, and diagnoses of interesting cases which are suitable for publication.

Cleft Palate in Lions of One Litter—A Case Report

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AN AFRICAN LIONESS (*Panthera leo*) at the San Diego Zoo gave birth to a litter of 3 cubs, 2 males and 1 female. One male was dead a few hours after birth and at necropsy was found to have a cleft palate. No other gross pathological changes were seen.

The 2 remaining cubs were then taken from the mother, and were also found to have cleft palates. Both cubs were euthanatized.

The lesions in the male cubs appeared to be almost identical, with fusion of the palate at its premaxillary portion extending posteriorily for 0.5 cm. The left and right maxillary palatine processes were each only 1 cm. wide, leaving a cleft 2 cm. wide posteriorly and tapering anteriorly to 3 mm. in width. In the female, the palatine process of the left maxilla apparently developed normally, reaching the midline, but the right palatine process was smaller than in the males, only 4 mm. in width. The premaxillary portion of the palate was fused, as in the male cubs. The resulting cleft was 1.5 cm. wide at its posterior margin and 3.0 mm. wide at the anterior limit (fig. 1).

Fig. 1—Photograph showing the failure of both palatine processes to reach the midline in a male lion cub (left), and the unilateral arrested development on the right side in the female cub. Notice also the failure of the nasal septum to grow ventrally.

—*San Diego Zoo Photo*

DISCUSSION

The hard palate is formed chiefly by the bilateral ingrowth of the palatine shelves or processes of the maxillae, with the palatine bones posteriorly and the palatine processes of the premaxillae anteriorly. These bones normally fuse with each other and the nasal septum. Hence, the anatomic basis of cleft palate is the failure of these bones to develop normally.[1,6,8]

The genetic basis of the cleft palate and harelip has been fairly well established in man. The traits are presumed due to specific alleles (genes) at several autosomal loci, but affected by sex. In man, 60 per cent of the cleft palates are in males and the anomaly tends to be more severe in males than in females.[7] The lesions seen in the 3 cubs seem to corroborate this observation.

Manifestation of the trait also seems to be somewhat influenced by environmental factors such as age of the dam, number of previous pregnancies, nutrition, and other potential stress factors. The occurrence of this condition in captive animals, especially

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in zoos, is not uncommon.[2-5] The increased incidence of the anomaly in captive animals may be due to inadequacies of diet, although genetic predisposition appears to be necessary.[6] Certainly the other stress factors listed must also play a part.

Cleft palate can be corrected by surgical means.[2] However, it was considered undesirable to keep animals which would potentially perpetuate this heritable trait.

SUMMARY

Congenital cleft palate occurred in all of 3 newborn African lion cubs in one litter. The presumed genetic and environmental factors influencing this anomaly, as well as the anatomic basis, are discussed.

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Use of Promethazine in Obstetrics

Promethazine (Phenergan-Poulenc Ltd., Montreal) hydrochloride was used during the first stage of labor in over 7,500 obstetrical patients. It was given intramuscularly (25 to 100 mg.) with meperidine hydrochloride (50 mg.).

When compared with similar control patients, promethazine was a safe and effective tranquilizer. It rendered labor less unpleasant, reduced the need for analgesics and anesthetics which have undesirable side-reactions, and shortened labor significantly in uncomplicated primiparous cases. Resuscitation of the infant was almost never necessary.—*J.Am.M.A. (Dec. 27, 1958): 2218.*

Recurrence of Urinary Calculi in a Dog

On Aug. 2, 1956, a male Cocker Spaniel, 4 years old, showed clinical signs typical of cystic urinary calculi. Two rough and granular calculi were removed: one was egg-shaped, being 4.25 cm. long by 3.5 cm. in diameter; the other was the size and shape of a marble.

On Sept. 30, 1958, the same dog (apparently normal this time) was examined and found to have more calculi. Again two stones were removed but they were smooth and apparently had caused no distress, although the bladder wall was thickened. One was egg-shaped, being 4.5 cm. long and 3.2 cm. in diameter; the other was about the size of a marble but was pyramidal in shape.—*Dr. A. M. Davis is a general practitioner in Tallahassee, Fla*

Treatment of Bulls Infected with Trichomonas Foetus

The silver nitrate method* of treating bulls infected with *Trichomonas foetus* has been used in Germany with good results.

Any method of anesthesia may be used which allows the penis to be withdrawn and which anesthetizes the mucosa of the penis. The entire mucosa of the penis is painted with 25 per cent silver nitrate solution. This should be started on the mucosa of the penis, which is less sensitive than that of the prepuce. Next to be treated is the thin and tender preputial mucosa which becomes gray upon application of the solution. As soon as the light gray color appears, saline solution must be applied in order to neutralize the silver nitrate.

After this treatment, the use of an antibiotic ointment is recommended to eliminate the possibility of adhesions. For about 14 days, the bull should not be sexually excited, because an erection may cause irritation of the treated mucosa. Results of the treatment should be determined by the usual microscopic and cultural examinations.—*W. Leidl, D.V.M., Logan, Utah, at the 1959 meeting of the Intermountain V.M.A. in Salt Lake City.*

*Guenzler and Rettenmaier: Die Silbernitratbehandlung trichomonadeninfizierter Zuchtbullen. Tierarztl. Umschau, 10, (1955): 315.

NUD—A Previously Undescribed Disease Distinguishable from Hog Cholera and Swine Erysipelas

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THE TWO ACUTE swine diseases which cause most diagnostic difficulties are hog cholera and swine erysipelas. The tendency has been to consider and treat for both diseases in herds not previously immunized against hog cholera, and to be concerned with swine erysipelas in herds that have been immunized against hog cholera. Often a tentative field diagnosis of erysipelas cannot be confirmed by isolation of the organism in the laboratory, but the diagnosis remains because of the unpredictability of isolation of the disease organism.

This paper is a preliminary report on a previously unreported swine disease entity. This disease, presumably caused by a viral agent, may be confused with both hog cholera and swine erysipelas because of the sudden onset and high temperatures, followed by death. It is immunologically distinct from both hog cholera and swine erysipelas.

PROCEDURES AND RESULTS

*Natural NUD.**—For many years the University of Nebraska swine herd, at the old serum plant, has been intermittently plagued by a disease which frequently has been diagnosed as swine erysipelas. The gross lesions shown are similar to those in acute swine erysipelas and hog cholera. Cultures for erysipelas, made by accepted methods, were often negative.

In August, 1957, 30 naturally farrowed, hog cholera-immune 150-lb. feeder pigs were transferred from a University "disease-free"[3] herd to the old serum plant. They were placed in a dirt lot with 30 serum plant pigs of comparable size. The serum plant herd was not considered disease-free, as the disease chain had not been broken by hysterectomy and isolation.[2] Many of the "disease-free" pigs promptly became sick and 12 died during the following week. On necropsy, they showed the general lesions of swine erysipelas but all cultures were negative.

Following this experience, 4 more "disease-free" pigs were placed in the same feeder lot. Two of these animals were isolated in the laboratory, after 48 hours of exposure, and both died 72 hours after the start of exposure. The remaining 2 pigs were killed when moribund on the fifth day. On necropsy, there were no gross lesions except extremely hemorrhagic kidneys in 1 of the moribund pigs. Blood, heart, spleen, and liver tissues from all 4 pigs were cultured and were negative for swine erysipelas.

It was noticed that the serum plant pigs fought a great deal with those added to the herd. This was evidenced by the skin lacerations. In the second group of pigs moved to the serum plant, the time of death was earliest in those with the greatest number of lacerations. The 2 pigs which died on the third day had many more lacerations than the 2 killed on the fifth day. The number of lacerations could have influenced the size of the inoculum and the amount of stress on the animal.

Experimental NUD.—Blood specimens collected from 4 naturally infected pigs were diluted 1:10 in nutrient broth and given to 1-week-old, disease-free, colostrum-deprived pigs obtained by hysterectomy.[2] This material was generally given by a scratch-injection technique in the axillary space; 0.5 ml. flooded over a scratched area and 0.5 ml. injected into the axillary region. These pigs died or were moribund in two to six days.

Infective material was also given intranasally-orally to 4 pigs, 3 of which died, 2 on the third day and 1 on the eleventh day; the fourth remained normal.

The pig blood was inoculated, by the allantoic and yolk sac route, into 10-day-old chicken embryos. The agent failed to multi-

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*NUD (pronounced—nude) was the name given this new disease because of its original identification in one of the Nebraska University (NU) herds and original isolation of the causative agent by the senior author (NU)—(Comment by G.A.Y.)

Research supported in part through grant-in-aid from Lederle Laboratories Division, American Cyanamid Co., Pearl River, N.Y.

ply in the allantoic sac, but grew readily in the yolk sac. Seventh-passage yolk sac material had an infective titer of 10^{-5} as compared to 10^{-3} in the blood used for the original inoculation. To date, the agent has been passed ten times in embryo yolk sacs, and has an $l.d._{50}$ titer of 1:200 for 4-day-old chicken embryos. Blood and yolk sac material stained by the Macchiavello, Giemsa, and Gram's stains have failed to reveal any organisms.

Of the 112 pigs used in these studies, 39 were inoculated by the scratch-injection method with either infected blood or yolk sac material at concentrations sufficient to produce disease. Of the 39, 37 died or were killed when moribund. Their body temperatures rose rapidly to 107 F. or higher, dropping to normal or subnormal as they became moribund. The other pigs were not infected because, before inoculation, the agent had been subjected to such conditions as destruction by heat, retention by filters, dilution beyond infectivity, and treatment with antibiotics.

Upon gross examination at necropsy of these experimentally infected animals, the most common pathological changes were petechiated kidneys, enlarged spleens, and soft, darkened livers (fig. 1). The lungs

Fig. 1—Typical lesions of NUD in swine. Notice petechiated kidney and enlarged spleen.

were frequently congested but rarely consolidated. The other organs appeared normal.

The Etiological Agent.—Broth and agar mediums of beef heart infusion, tryptose phosphate, thioglycollate, liver infusion, PPLO, and blood agar plates prepared with sheep and swine blood were each inoculated with blood and material from the various organs. The cultures were incubated at 37 C. under aerobic and anaerobic conditions. Positive bacterial cultures were recovered from some of the pigs which had died prior to culturing. These cultures were negative for *Erysipelothrix rhusiopathiae* and, when inoculated into pigs by the scratch-injection method, failed to produce the NUD syndrome. Mice, sheep, and turkeys were also inoculated intranasally-orally, intraperitoneally, or intramuscularly without any evidence of disease.

Tissue cultures of primary bovine kidney and fourteenth-passage porcine kidney were inoculated. The agent persisted through the first transfer but failed to survive, or was lost through dilution, by the fourth transfer.

Studies on heat resistance showed that this agent lost its infectivity when heated to 50 C. for 15 minutes. The agent was susceptible *in vitro* to penicillin, streptomycin, and chlortetracycline. In two experiments, 2 moribund baby pigs were given 300,000 units of penicillin, and completely recovered in about 12 hours.

Filtration experiments showed that the agent could easily pass on 015 Selas filter but not the 02. The average pore size of the 015 Selas filter is 0.7 μ and 0.42 μ for the 02 Selas. This would indicate a particle size of the agent of approximately 200 to 300 mμ. This is based on the assumption that only particles about one third the average filter pore size are capable of passing the type of filters used.

Neutralization experiments were conducted *in vitro* with yolk sac agent and a laboratory-prepared anti-hog cholera serum, and *in vivo* with commercially prepared anti-hog cholera and anti-swine erysipelas serums. In all cases, the serums failed to protect the pigs, although the commercial hog cholera serum did prolong the life of test pigs for several days. The characteristics of the NUD agent are summarized (table 1).

Later Experiments.—An attempt to reisolate the agent from the same herd was made one year after the original isolation. Two groups of 3 "disease-free" pigs were again transferred to the serum plant. However, there was no indication of infection. Serum from one group was collected prior to, and three weeks after, exposure. Neutralization experiments showed that the pre-exposure serum would not neutralize 100 infective doses of the agent; the test pigs died. However, the serum collected after three weeks of exposure did neutralize the 100 infective doses; the test pigs showed no signs of the infection. These serums were tested and found negative for antibodies to brucellosis and leptospirosis.

Although antibody was produced, failure to establish signs of the disease in the last 6 naturally exposed pigs could perhaps be attributed to two factors: (1) These pigs did not fight the serum plant pigs and, therefore, were not inoculated through body lacerations; and (2) the serum plant pigs had all been on a low level antibiotic feed. As susceptible as the agent is to antibiotics, it is conceivable that continuous low level antibiotic feeding could control the infection.

TABLE 1—Summary of Characteristics of NUD and NUD Agent

Property evaluated	Results
Experimental hosts	Positive—swine, all ages; fertile chicken egg (yolk sac only). Negative—mice, sheep, turkeys; porcine and bovine kidney culture cells.
Filterability	Passed by 015 Selas (av. pore size 0.70 μ). Retained by 02 Selas (av. pore size 0.42 μ).
Cultivation	Negative—enriched mediums, aerobic, anaerobic.
Staining characteristics	None—Macchiavello, Giemsa, and Gram's.
Heat stability	Destroyed at 50 C. for 15 minutes.
Sensitivity to antibiotics	Penicillin, streptomycin, and chlortetracycline are all effective.
Immunological property	Neutralized by specific antiserum. Not neutralized by commercial anti-hog cholera serum or anti-swine erysipelas serum.

In vivo neutralization experiments were conducted in two groups of unrelated, naturally farrowed pigs, 1 week old, which obtained colostral antibody. The agent was neutralized in both groups. Two 40- to 50-lb. pigs from a third herd also had sufficient antibody to protect them when inoculated with the agent. The results of these neutralization tests would indicate that this disease is not confined to the one herd.

DISCUSSION

Because it can be effectively controlled by antibiotics, NUD need not be a serious disease of swine. The greatest concern should be for the confusion it might cause through failure to recognize its existence; also its possible confusion with hog cholera and swine erysipelas.

We do not know to what extent it exists in swine throughout the country, but it was

found in three herds that were studied and, quite likely, is a common disease of swine. This opinion is substantiated by the demonstration of its existence in a subclinical form for over a year in one herd.

The real concern about this disease should be in relation to the immunization of swine for hog cholera. Characteristically, hog cholera vaccination lowers resistance of swine to secondary infections. A herd harboring NUD in a subclinical state at the time of vaccination for hog cholera could suffer losses. The high temperatures and petechiae on the kidneys could be erroneously interpreted either (1) as a failure of the anti-hog cholera serum to control the virulent or modified hog cholera virus given simultaneously, or (2) as a reversion to virulence of an attenuated vaccine. Acceptable biological agents could thus be condemned for trouble they had not caused.

Great care should be used in investigating vaccination problems because this disease can be transmitted experimentally and can be confused with hog cholera. Tests would need to include both hog cholera-susceptible and hog cholera-immune swine, all originating from the same herd, to assure either a uniformly immune or nonimmune status to NUD.

With the identification of this disease, the usefulness of antibiotics in hog cholera immunization should be considered. The successful use of chlortetracycline has already been reported.[1] In this case, the antibiotic was fed before and after vaccination. Antibiotics could also be injected at time of vaccination either within the vaccine or serum, or separately. When antibiotics are used with living vaccine, the antibiotic should show pH near neutral to prevent damage to the hog cholera virus.

There is no convenient category for classification of this agent. Its size (about 300 mμ), ability to grow in the yolk sac of embryonating chicken eggs, sensitivity to antibiotics, and the temperature level at which it is inactivated, tend to place it in the psittacosis-lymphogranuloma-venereum group of viruses. It has some rickettsia-like properties but does not produce cellular lesions demonstrable by Macchiavello or Giemsa stains and it is susceptible to penicillin. Logically, considerable more research must be done before any specific attempt should be made to classify it.

This disease may have been present for a long time but not differentiated from other diseases.

Attempts to isolate this agent by conventional methods would fail because tissue suspensions routinely treated with antibiotics to reduce the numbers of contaminating bacteria also destroy the NUD agent. Use of the fully susceptible disease-free, antibody-devoid pig has been the essential factor in demonstrating this disease.

SUMMARY

A previously unreported disease of swine (NUD), with an incubation period of two to six days, high body temperature, and a high mortality is described. It is characterized by petechiated kidneys, an enlarged spleen, and a soft, engorged liver.

This disease closely resembles field cases of hog cholera and swine erysipelas in some ways.

The NUD agent grows well in the chicken embryo yolk sac, is inactivated at 50 C. for 15 minutes, is susceptible to antibiotics, and is in the size range of the psittacosis-lymphogranuloma-venereum group of viruses.

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Progress in Hog Cholera Eradication

Following the hog cholera epizootics caused by variant strains in 1949 and 1950, widely recognized authorities urged that the following actions be taken in an attempt to eradicate the disease:

1) *The use of virulent virus should be prohibited.* In 1950, the year prior to the introduction of modified vaccines, approximately 94 per cent of the vaccinated swine were given virulent virus. By 1955, only 32 per cent, and by 1958 only 11 per cent, were vaccinated with virulent virus (table 1),

TABLE I—Changes in Marketing of Hog Cholera Viruses

Fiscal year	Modified vaccines with serum (doses)	(%)	Modified vaccine without serum (doses)	(%)	Inactivated vaccine (doses)	(%)	Virulent virus with serum (doses)	(%)	Total sales (doses)
1956	15,242,462	42	9,333,987	25	1,993,034	5	10,119,211	28	36,688,694
1957	17,968,965	51	9,389,524	26	1,995,817	5	6,586,231	18	35,900,537
1958	20,409,197	58	8,842,405	25	2,223,833	6	3,928,565	11	35,404,000

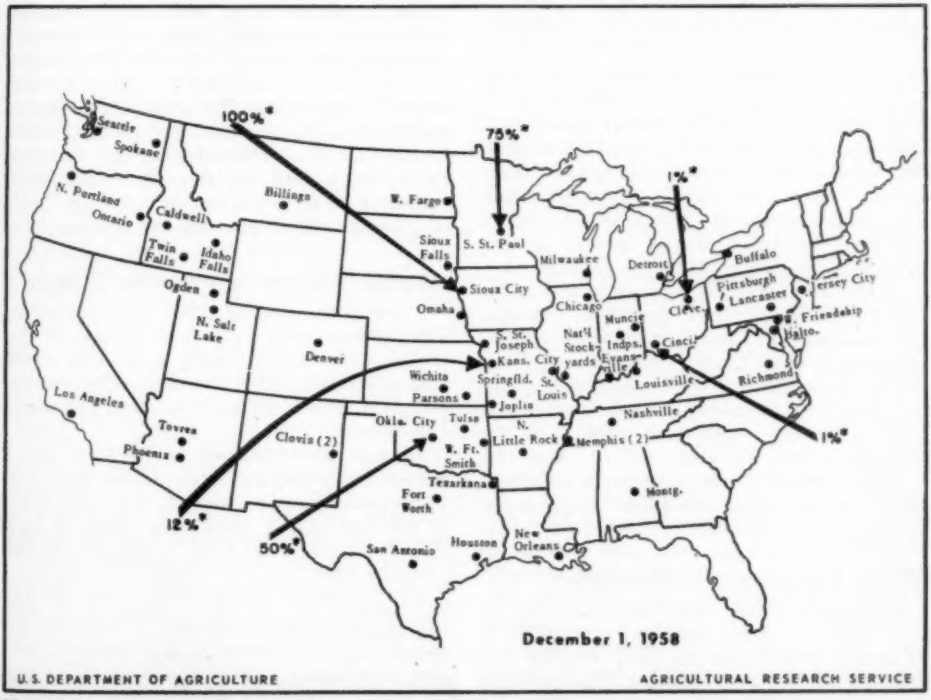
and in 19 states laws or regulations were passed to prohibit its use (*see* Jan. 1, 1959, JOURNAL, p. 145). In eight years, the vaccination of pigs with modified vaccines had increased from none to 83 per cent. Since 1955, the major shift has been from virulent virus to modified virus used with serum.

In 1958, of the hogs going back to farms from the 64 federally inspected stockyards, virulent virus was used in vaccinating those from only six yards (fig. 1), and in only 1 per cent of the vaccinated hogs from two of the six yards.

2) *Pilot projects should be established to evaluate and compare effectiveness of virulent hog cholera virus with modified live virus and killed or inactivated virus.* One such project was set up in Florida in 1954, and since then that state has prohibited the use of virulent virus.

3) *Garbage fed to hogs should be cooked.* In 1958, 96 per cent of such garbage was cooked and it is expected that the percentage will be increased in 1959.

4) *Hog cholera must be made reportable.* We have become so accustomed to living with this disease that little progress has been made in this direction. There should be renewed effort to determine the true extent of hog cholera, to learn about its changing characteristics as it occurs in



*Percentage of hogs vaccinated with virulent hog cholera virus.

Fig. 1—Virulent hog cholera virus was used in only six of the public stockyards operating under federal inspection in 1958.

the field, and to evaluate the effectiveness of the various immunizing agents.

It is inadvisable to attack a disease only to the extent that the causative agent is forced to become insidious, to lie in wait, and to camouflage its characteristics in order to survive. Atypical hog cholera has already appeared and quite often we do not see the same postmortem changes we saw ten or 15 years ago.

Recent research highlights the possibility that hog cholera virus may be carried

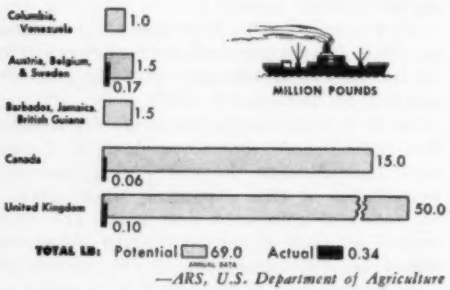


Fig. 2—This illustrates the potential pork exports if vesicular exanthema and hog cholera were eradicated.

through the second generation of lungworms (JOURNAL, Jan. 1, 1959, p. 143). The importance of this factor throughout the country is unknown but it is clear that the longer an eradication program is delayed the more difficult it will be to eradicate hog cholera. It cannot be eradicated on the herd basis alone; rather, all epidemiological factors must be considered.

There are potential foreign markets for 69,000,000 lb. of pork provided vesicular exanthema (VE) and hog cholera can be eradicated (fig. 2). The momentum for a complete eradication program by the swine industry is increasing. Other groups are looking to the veterinary profession for leadership and direction.—*F. J. Mulhern, D.V.M., Animal Disease Eradication Branch, ARS—presented at the 1959 annual meeting of the Iowa V.M.A.*

Cholera Decrease in Montana

As many as 50 separate outbreaks of hog cholera were reported annually in Montana several years ago. During the 1957-1958 fiscal year, cholera occurred only once and the losses were slight. This decrease was attributed to the restrictive import regulations, the sanitary board's prohibiting the use of live virus, and enforcement of the garbage-cooking law.

Erysipelas was the most serious swine disease, being responsible for more than half of all sick swine reported.—*Rep. Montana Livestock San. Board (June 30, 1958): 12.*

Infectious Gastroenteritis of Pigs

A highly infectious gastroenteritis of pigs is widespread in England, especially in the eastern portion. It has a short incubation period, causes profuse diarrhea, occasional vomiting, but rarely pyrexia. In a study of over 700 affected swine, the mortality during the first week of life was 91 per cent; during the second week—52 per cent; during the third week—25 per cent; during the fourth week—9 per cent; with no deaths in animals more than 4 weeks old.

Necropsy of several pigs more than 3 weeks old, which died of the disease, showed petechial hemorrhages in the larynx, bladder, lymph nodes, brain, and occasionally in the lungs and heart, together with splenic infarcts. These were indicative of hog cholera, but all tests for this disease, as well as for Aujeszky's disease, were negative. Otherwise, the clinical and pathological findings agreed closely with those of transmissible gastroenteritis as reported from the United States.—*R. F. W. Goodwin and A. R. Jennings in J. Comp. Path. & Therap., 69, (Jan., 1959): 87.*

Another Gastroenteritis-like Disease

During the fall of 1957 and spring of 1958, young pigs in several herds, in Ontario, were affected with a disease which somewhat resembled transmissible gastroenteritis. It was called "vomiting and wasting disease."

It was characterized by sudden onset, persistent vomiting, little fever, but with constipation more evident than diarrhea. It affected pigs 4 days to 8 weeks of age. The mortality was high, especially in the younger pigs.

At necropsy, there were few lesions except some gastritis and enteritis; the ingesta was often gaseous and greenish yellow. Attempts at transmission were inconclusive. No effective treatment is known.—*Canad. J. Comp. Med., 22, (July, 1958): adv. p. 3.*

Effect of Environment Versus Breeding on Farm Flock Incidence of Visceral Lymphomatosis

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THAT RELATIVE resistance to lymphomatosis is a heritable trait has been amply demonstrated.[2,4] The fact that no poultry breeder has yet been able to eliminate the disease entirely from his stock, however, is evidence that genetic susceptibility is not the only factor involved in the spreading of this disease. Exposure to one or more specific viral agents, which may be transmitted through the hatching egg or by direct contact, is also an important factor, as are environmental influences (stress factors.[1,3]

Hatcherymen have long known that different poultrymen, each purchasing chickens of the same breeding, from the same parent sources, and hatched, sorted, and sexed together as a single group of chickens, frequently have greatly different experience with the incidence of lymphomatosis.

The objective of this survey was to trace all flocks of chickens hatched together, some of which ultimately gave a high laying period incidence of visceral lymphomatosis, and to report all available pertinent information on their performance.

PROCEDURE

The three large midwestern hatchery outlets studied were under a single administrative management and hatched chickens of identical hybrid breeding, but each had its own independent supply flocks. The scope of the operation is shown (table 1).

The three hatcheries also shipped hatching eggs to approximately 70 other hatcheries. In the egg processing and shipping operation, eggs from four to six different parent flocks of identical breeding were graded simultaneously by machine, then placed on a moving belt in filler-flats and transported to another station where they were cased for shipment to the hatchery. Thus, each case of hatching eggs contained eggs from four to seven separate farm sources, and eggs from each source were placed in several cases, blended in each with eggs from several other flocks, for shipment. Thus no hatchery at any one time hatched eggs from fewer than four flocks, the eggs being blended at random. The average order required approximately 2.1 cases of hatching eggs.

At the hatchery, all eggs of one variety (breeding) were taken from the cases at random and placed in incubator trays and the trays were placed in the incubators, again at random within one variety. The trays were identified only by variety and hatching date.

After hatching, the chickens were sorted, boxed, and sexed, usually by two or more persons working simultaneously from different boxes but placing the chickens in a common box, thus blending them again. The chickens, identified only by breeding and sex, were then made up into orders at random.

This method of handling eggs and chickens should insure adequate blending of all chickens of one variety hatched at that hatchery on that date, with regard both to (1) inherited resistance or sus-

TABLE 1—Hatchery and Parent Flock Data Used for a Survey on Visceral Lymphomatosis in Chickens

Hatchery	No. parent flocks		Av. parent flock size (No. pullets)	No. customers sold	
	Variety A	Variety B		Variety A	Variety B
I	159	203	421	405	283
II	96	130	652	206	218
III	77	98	518	123	156

From Hy-Line Poultry Farms, Department of Pioneer Hi-Bred Corn Co., Des Moines, Iowa.

ceptibility to lymphomatosis and (2) exposure to any egg-transmitted viruses which may be present.

The hatcheries under study carried on an aggressive hatchery service program, making routine poultry management analysis calls on nearly every customer during the growing period of the birds, urging their customers to call the hatchery should any questions or problems of management or of disease control or prevention arise.

RESULTS

A summary of visceral lymphomatosis reported for chickens hatched during the 1956 to 1957 hatching season at the three hatcheries was listed by hatchery, hatch date, and variety (table 2). This table incorporates information from all available sources (including this study) on all flocks hatched during the season, and demonstrates clearly that there is a difference between the two varieties in the incidence

TABLE 2—Known Cases of Visceral Lymphomatosis by Hatch Date, Hatchery Source, and Variety of Chicken

	Hatchery I						Hatchery II						Hatchery III					
	Variety A			Variety B			Variety A			Variety B			Variety A			Variety B		
		V.L.			V.L.			V.L.			V.L.			V.L.			V.L.	
Hatch date	No. farms	(No.)*	(%)**	No. farms	(No.)	(%)	No. farms	(No.)	(%)	No. farms	(No.)	(%)	No. farms	(No.)	(%)	No. farms	(No.)	(%)
July-Dec. (1956)	8	0	0	4	0	0	0	0	..	5	0	0	1	0	0	1	0	0
Jan. (1957)	0	0	..	2	0	0	1	1	100	4	0	0	0	0	..	1	0	0
Feb.	35	2	6	14	1	7	11	3	27	30	0	0	6	0	0	12	1	8
March	58	5	9	41	0	0	47	3	6	49	0	0	29	5	17	39	0	0
April	110	0	0	56	0	0	81	0	0	77	0	0	47	0	0	52	0	0
May	130	0	0	62	0	0	66	0	0	51	0	0	35	0	0	47	0	0
June	14	0	0	4	0	0	0	0	..	2	0	0	5	0	0	4	0	0
Total	405	7	2	183	1	1	206	7	3	218	0	0	123	5	4	156	1	1

*No. of farms on which visceral lymphomatosis was diagnosed; **percentage of farms on which visceral lymphomatosis was diagnosed.

The company employed two veterinarians to help in this work. When the birds were 7 months old, every customer was sent a questionnaire regarding his flock's performance. The requested report provided information on livability to productive age, livability since housing, and current rate of egg production. With this type of program in effect for several years, it is unlikely that any serious disease problems occurred without the hatcherys' knowledge.

In December, 1957, through February, 1958, one of us (GHL) visited all flocks from the three hatcheries on which a diagnosis of visceral lymphomatosis had been made, as well as all other flocks of the same variety hatched at the same time at the same hatchery. Information from almost every flock was gathered on flock size, total laying house losses, current rate of egg production, and the diagnosis, if made, of the principal cause of the losses. Usually when losses were low, no diagnosis had been sought.

of visceral lymphomatosis. It also shows the association of cases of visceral lymphomatosis and date of hatch, with all but one of the "trouble" flocks having been hatched during February and March. Thus, 95.2 per cent of the known cases of visceral lymphomatosis occurred in chickens hatched during the two months when only 28.7 per cent of all the chicken orders for the season were hatched.

The history of every flock of the same breeding and hatch as each flock in which visceral lymphomatosis was diagnosed was obtained as far as possible (table 3). The laying period for each flock began at housing date (which varied considerably, even within the same hatch) and ran until the date of the visit as part of this study (which varied only a few days for birds from the same hatch).

At the time this information was collected, necropsies were conducted on healthy-appearing birds, as well as obviously sick ones, in each flock in which visceral

TABLE 3—Laying House Performance of All Flocks of Same Breeding and Hatch as Flocks Exhibiting Visceral Lymphomatosis

Hatchery	Hatch date	Variety	Flocks with diagnosis of visceral lymphomatosis			Flocks with no diagnosis of visceral lymphomatosis			Other diagnoses with No. of flocks
			No.	Av. laying house loss (all causes)	Av. current laying rate	No.	Av. laying house loss (all causes)	Av. current laying rate	
I	2/12	A	1	16%	72%	1	0.7%	74%	———
	2/22	B	1	17%	70%	2	4.0%	80%	———
	2/26	A	1	15%	78%	14	4.0%	74%	———
	3/1	A	2	13%	82%	7	6.0%	74%	Cholera (1)
	3/5	A	1	20%	70%	5	5.0%	79%	———
	3/8	A	1	20%	68%	5	6.0%	80%	Cholera (1)
	3/12	A	1	16%	65%	8	7.0%	77%	Cholera (1) Bluecomb (1)
II	1/15	A	1	25%	*	0	----	----	———
	2/1	A	2	26%	77%	0	----	----	———
	2/22	A	1	36%	70%	1	3.0%	80%	———
	3/1	A	1	24%	80%	2	8.0%	72%	———
	3/8	A	1	30%	65%	1	7.0%	70%	Smothered (1)
	3/22	A	1	30%	**	5	4.0%	79%	———
III	2/22	B	1	50%	65%	1	3.0%	82%	———
	3/8	A	2	36%	80%	2	4.0%	80%	———
	3/12	A	2	34%	68%	3	7.0%	75%	Cholera (1)
	3/19	A	1	53%	70%	1	13.0%	70%	Typhoid (1)

*Flock sold; **farmer uncooperative.

lymphomatosis had been reported. In every such flock except one, some type of independently significant enteritis was found, even in birds showing no gross evidence of lymphomatosis.

DISCUSSION

Much has been written and said about two phases of the problem of visceral lymphomatosis: (1) resistance or susceptibility by breeding and (2) egg transmission of a specific infectious agent. There is much data to support both. While the authors recognize that differences in susceptibility by virtue of breeding do exist, and accept, at least tentatively, that a causative agent may be transmitted from parent to offspring via the hatching egg, the present data indicate strongly that these two factors do not explain the wide variation of lymphomatosis incidence of different flocks made up of random samples of chickens from the same parent sources of identical breeding hatched together.

If breeding and transovarian infection were the major factors in the transmission of lymphomatosis, there should be, in chickens of identical breeding and from the same parent sources, a few flocks showing a low incidence, many flocks showing an intermediate incidence, and a few flocks showing a high incidence.

On the other hand, if the major factors determining the incidence of this disease were part of the physical and biological environment, the pattern of incidence would be expected to be one in which there was a high incidence under some conditions and a low incidence under others, regardless of the background of the birds involved.

The data were obtained from the farmer or poultryman, and in few cases represent accurate record keeping. The differences in lymphomatosis incidence, however, are so wide that even if broad allowances are made for such inaccuracies, there must be farm influences which have a much greater effect on the incidence of lymphomatosis than do breeding and infection from hatchery source.

CONCLUSIONS

1) The incidence of visceral lymphomatosis varies with the breeding of the birds. However, even so-called "resistant" varieties of chickens are not completely refractory to the disease.

2) There are wide farm-to-farm differences in lymphomatosis incidence, even among birds of identical breeding and parent sources which are hatched together.

3) The incidence of visceral lymphomatosis is far more characteristic of the farm environment than of the bird involved.

4) One of the factors affecting the incidence of visceral lmphomatosis is hatch

date, with a higher incidence in birds hatched in January, February, and March than in April, May, and June.

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Avian Infectious Synovitis

Infectious synovitis of chickens and turkeys is characterized by involvement of synovial and hepatic tissues. The birds are lame, depressed, and develop a green diarrhea. Mortality is low but morbidity may be 50 per cent. The chief lesions are synovitis, reticulocytosis of the liver, pericarditis, and a myelocytic hyperplasia of the bone marrow. The infective agent (possibly a large particle virus) was isolated in chicken embryos and the disease was reproduced by its inoculation into young chickens.

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In prophylaxis and therapy tests, chlortetracycline was more effective as a prophylactic feed medication than was oxytetracycline, and furazolidone was less effective than either. Dihydrostreptomycin was effective only when given subcutaneously early in the incubation period.—*G. H. Snoeyenbos et al. in Avian Dis., 2, (Nov., 1958): 499; 514.*

Human Ornithosis from Turkeys in Wisconsin

A large reservoir of mild ornithosis, largely subclinical, was found in a survey of turkeys, starting in 1954, in Wisconsin and Minnesota. Close surveillance of the workers in the turkey-processing plants in the infected area in Wisconsin was started in December, 1956. Of 215 workers serologically tested, 19 (8.8%) were positive; ten had clinical and nine had inapparent infections. The virus was not isolated from these persons but the serotype was identical with the virus isolated from the turkeys.

This is the first record of human infection with turkey ornithosis virus of such low virulence. In spite of tetracycline therapy, 47 man days were lost due to this illness. Later, to protect the workers, turkeys in seropositive flocks were fed chlortetracycline (400 p.p.m.) in mixed feed for eight days before being processed. It is too early to draw conclusions as to the efficacy of this procedure.—*R. E. Graber and B. S. Pomeroy in Am. J. Pub. Health, 48, (Nov., 1958): 1469.*

Turkey Infectious Tenosynovitis

When 10 per cent of breeder toms in a barn developed sensitive, swollen hocks and eventually died, a gram-negative *Streptobacillus moniliformis* was isolated from the tendon sheaths. The disease could be reproduced in poults by intravenous and foot pad inoculation; chickens were resistant.—*C. I. Boyer et al. in Avian Dis., 2, (Nov., 1958): 418.*

Confinement Effect on Turkey Growth

For three consecutive years, the growth of turkeys (Broad-Breasted Bronze and small type White) raised in confinement and on the range was compared. When 6 months old, there was no difference in growth rate, feed efficiency, or mortality, but the breasts were much better developed and broader in the range-raised group, especially among the males.—*Poult. Sci. (Nov., 1958): 1304-1308.*

Histoplasmosis in Man from Fowl

A man and his two children, in Alabama, developed atypical pneumonia with marked anorexia, low fever, sore throat, cough, and depression 15 to 19 days after they had spread chicken manure on flower beds. Roentgenograms revealed pulmonary densities. The father died of the infection.

Serological tests were negative for several diseases, but the histoplasmin tests were positive. *Histoplasma capsulatum* was isolated from the man's tissues and from two samples of the fertilized soil.

Since an apparently effective new antimicrobial drug, amphotericin B, is now available, a quick diagnosis becomes urgent so therapy can be started promptly.—*Am. Rev. Tuberc., 78, (Oct., 1958): 580.*

Obstruction of Colostrum Protein

There is a question as to whether disappearance of immune proteins from the colostrum coincides with the loss, on the part of the young, of the ability to absorb these proteins. Early investigations indicated that the human infant's blood antibody titer did not increase as a result of colostrum feeding, whereas the opposite is true in most animal species. On the other hand, due to placental transfer of antibody, the blood titers of the newborn infant reflect that of the mother, whereas titers in newborn of many animals do not.

This may be explained by the difference in thickness of the placental barrier in these species. The membrane separating the maternal from the fetal blood is one cell thick in the human species as well as in the guinea pig, rat, and rabbit; but it is 3 cell layers thick in the cow, goat, and sheep, making the latter more impermeable to protein.

When newborn goats were fed a first postpartum colostrum from the cow, the protein which appeared in the blood of the kid seemed to be the same as that of the colostrum, with no apparent alterations in the proteins as a result of the intestinal absorption. However, there seemed to be a certain amount of selectivity in the absorption of proteins by the kid, since other colostrum and milk proteins failed to appear in its blood.

Efforts to prolong the period during which the intestinal mucosa of a calf was permeable for immune protein, by injecting various hormones simultaneously, were not succesful. Most of the colostral proteins seemed to be absorbed and the major portions were then excreted in the urine.

It seems that the newborn calf, foal, lamb, kid, and pig are able to absorb certain proteins from the colostrum for only one or two days following birth, the same period in which the proteins appear in the dam's colostrum.—*Nutr. Rev., 16, (Nov., 1958)*: *342.*

Effect of Protein Feed on the Pathogenesis of Swine Erysipelas

When 454 samples of feces from 67 clinically healthy pigs were examined, *Erysipelothrix rhusiopathiae* was isolated from only three samples. However, the organism was isolated in the feces of 9 of 13 pigs with spontaneous swine erysipelas. No organisms were found in 352 fecal samples from 18 pigs after vaccination with virulent culture and anti-swine erysipelas serum.

Six of 9 shoats, 5 months old, which were fed a high protein diet, developed signs of clinical erysipelas in two to four days, after they were inoculated orally with 10 ml. of a 24-hour culture. Only 2 of 8 on a low protein diet became ill, but both died of erysipelas.

According to the theory of stress, it may be assumed that the pathogenesis of swine erysipelas is enhanced by the high protein feeding.—*C. Kurek in Bull. Inst. Pulawy, 2, (July, 1958): 21.*

Vitamin B_{12} in Sewage Sludges

Raw sewage solids, activated sewage sludge from the same source, and cow dung were examined for their vitamin B_{12} content.

There was little difference between the raw sewage and the cow feces, but a greatly increased vitamin B_{12} content in the activated sludge. Protozoa commonly found in the activated sludge also contained appreciable quantities of B_{12}.

These results indicate the possible use of activated sludge as a supplement to the feed of animals such as chickens and pigs. —*Science, 129, (Jan. 30, 1959): 276.*

Effect of Gibberellin Fed to Young

Crystalline gibberellin was fed in the starter ration to 112 weaned pigs 7 to 10 days old. The average daily gain in two of three groups fed gibberellin (10 to 1,000 mg. per ton of feed) was significantly greater than in controls. However, there was no difference in the appearance or behavior of the pigs attributable to the agent. The gibberellin was not toxic and, at levels up to 1 Gm./ton of feed, it may be beneficial.—*J. Anim. Sci., 17, (Nov., 1958): 1161.*

• • •

When 12 wether lambs in each of three experiments were fed gibberellin for 42 to 63 days, at the rate of 1 Gm./ton of feed, both their growth and feed efficiency were enhanced.—*J. Anim. Sci., 17, (Nov., 1958): 1172.*

Editorial

An Interesting Review on Respiratory Problems in Swine

An article in this issue, "Respiratory Problems in Swine," page 357, is an excellent review of an important subject by an eminently well-qualified author. Not only does Dr. Ray effectively summarize his long experience with diseases which affect the respiratory systems of swine, but he briefly offers some excellent advice regarding the technique of observing and handling swine.

No information in this good article is more important than the understatement that, when making a diagnosis, "There is considerable advantage in leaving the herd undisturbed so the pigs can be observed lying quietly. . . ." Without proper observation of undisturbed patients in their habitual environment, it is difficult to make a correct diagnosis. This is true of animals of any species but particularly of the suspicious and uncooperative pig. This is well illustrated by the following factual case:

> When typical hog cholera was diagnosed in a herd of over 300 hogs, all of market weight, the visibly sick animals were sorted out and the others immediately marketed. The owner, using an assumed name, then sent a load of the least sick hogs to market. When they sold readily, he then sold a load of the visibly sick hogs. When they were herded across the scales, even experienced hog buyers failed to notice that any of them were ill.

It is even more difficult to detect the early stage of acute erysipelas when the affected pigs are aroused. Before entering the building where sick hogs are kept, the doors should be quietly closed *from the outside* if possible, and those who enter the building should be warned to make no noise until observations of the pigs are completed. Such observations, plus reliable histories, if any, are usually of greater diagnostic value than necropsies alone.

Trends in Respiratory Diseases

Respiratory diseases of swine, long a vexing problem, were given little attention until 1918 when influenza appeared. For the next three decades, they were of concern chiefly because of the complications they could cause when pigs were vaccinated for hog cholera.

Influenza could be confused with cholera in the early stages of either disease. If the swine were unvaccinated and the diagnosis was in doubt, the only recourse was to give large doses of anti-hog cholera serum. The virus could be given later but it was often given simultaneously. If the disease proved to be uncomplicated influenza, the acute stage usually had passed before the reaction to the cholera virus started. Deaths from postvaccination reactions were more common when the animals had chronic pulmonary lesions (often unsuspected).

[For report of a new viral disease of pigs, which could cause postvaccination complications, see page 367 of this issue.]

In general, pulmonary diseases of swine became definitely more serious and more difficult to classify about a decade ago. Whether the specific virus pneumonia of pigs (VPP) was present then can only be surmised. However, probably more than in other species, few if any swine respiratory infections are attributable to any one agent.

Time for Research and Review

There is an old adage that "No news is good news." The point we have in mind is that when animal diseases and epizootics abound, those who are concerned eagerly seek information about these diseases and intensely study articles regarding them. Events have created in the eager readers of these articles, the "felt need" that pedagogists like to refer to.

Perhaps no period in recent decades provided more "felt need" for information regarding the cause, diagnosis, and control of animal diseases than did 1952 and 1953 when the epizootics of vesicular exanthema and bluetongue, and the enzootics of anthrax and scrapie were making headlines. The efficiency and dispatch with which those diseases were controlled (VE eradicated, we hope) is certainly a credit to the veterinary profession.

However, as has been the case in recent years, when the pendulum swings to the other extreme and few disease emergencies exist, urgency and interest abate and even the best articles on important diseases may seem relatively dull. Thus, at least to the editors, whom readers hold responsible for making periodicals stimulating, "no news" is not always unmitigated "good news."

Abstracts

Histopathological Changes in Mink and Ferrets with Distemper

Distemper inclusion bodies were demonstrated in transitional epithelium of the urinary system, epithelium of hepatic bile ducts, epithelium of the small intestine, and in reticular cells of the lymph nodes and lymphatic nodules of the spleen, but not in the brain, muscle, thyroid, adrenal, or salivary glands of mink and ferrets experimentally infected with distemper. Necrosis was present in lymphatics of the spleens of mink and ferrets and in lymph nodes of ferrets; lymph nodes of mink were not sectioned. Such necrosis presented a striking microscopic appearance—somewhat like punched-out areas.

Destruction of lymphatic tissue is suspected of playing a role in the lethal mechanisms of distemper because it was the most significant change encountered. Changes in the brain and lungs of themselves would probably not account for severe effects. The more susceptible species, the ferret, did not have ability to repair this damage, whereas the less susceptible mink was often able to repair the damage.

Virus was found in the tissues assayed. The organs in which the most pronounced changes occurred were usually those with the highest viral titer.—[*Edward Crook and S. H. McNutt: Experimental Distemper in Mink and Ferrets. II. Appearance and Significance of Histopathological Changes. Am. J. Vet. Res., 20, (March, 1959): 378-383.*]

Drugs Tested for Bovine Anaplasmosis

Of five drugs screened for activity in suppressing the numbers of Anaplasma bodies in Anaplasma-infected, splenectomized calves, only one, 4-amino-1-methyl-2-phenyl-6-(2 amino -1:6-dimethyl-pyrimidinium-4-amino) quinolinium dichloride (compound 10073), appeared to be effective.—*E. E. Staley, C. C. Pearson, W. E. Brock, and I. O. Kliewer: The Screening of Five Drugs for Their Activity Against Bovine Anaplasmosis. Am. J. Vet. Res., 20, (March, 1959): 297-299.*

Swine Kidney Cell Cultures

A simple procedure was used for the preparation of tissue cultures from trypsinized porcine kidney. Confluent sheets of epithelial-type cells in tubes and in bottles were obtained consistently. The following known viruses have been found to produce cytopathic effects in these cells: herpes simplex, pseudorabies, infectious canine hepatitis, Newcastle disease, and enteric cytopathogenic human orphan (strain 10). Viruses were isolated readily from the intestinal tracts of swine, using the described tissue culture system. So far, 30 unidentified viruses from eight swine herds have been isolated. Attempts are being made to determine their antigenic relationships, and their role, if any, in disease production. Characteristics of four of these agents are presented.—[*B. B. Hancock, E. H. Bohl, and J. M. Birkeland: Swine Kidney Cell Cultures—Susceptibility of Viruses and Use in Isolation of Enteric Viruses of Swine. Am. J. Vet. Res., 20, (Jan., 1959): 127-132.*]

Histology of the Genitalia of the Bovine Male

A histological study of 27 different areas of the bovine male genitalia revealed that the glandular tissue, the epithelium, and the other basic tissues are similar to the same structures in man. The heavy connective tissue of the corpus cavernosum penis limits erectile ability, and the connective tissue extension of the tunica albuginea of the penis converts the urethral groove of the penis into a urethral canal and limits urethral expansion.

The accessory genital organs of a castrated male more closely resembled the organs of a 1-day-old calf than a mature bull. Lymphocytes in the epithelium of the anterior part of the urethra were not uncommon in the mature bull. The muscles related to the genitalia were all the striated muscle type except the cremaster internus and the retractor penis muscles which were of the nonstriated type.—[*D. M. Trotter: Histological Observations of the Genitalia of the Immature, the Castrated, and the Mature Bovine Male. Am. J. Vet. Res., 20, (Jan., 1959): 213-222.*]

Books and Reports

Investments for Professional People

The revised edition of "Investments for Professional People" contains a wealth of information on investments, including chapters on income tax, insurance, utilization of banking facilities, real estate, and bonds and stocks.—[*Investments for Professional People. By Robert U. Cooper, M.D. 2nd ed. 310 pages. Macmillan Company, 60 Fifth Ave., New York, N.Y. 1959. Price $4.95.*

Comparative Anatomy

The third volume of this "textbook" is divided into four chapters.

The first chapter describes the circulatory and lymphatic systems of various species of domestic animals; the second discusses the central and peripheral nervous system; the third deals with sensory organs; and the last chapter is devoted to the skin, udder, hoofs, claws, nails, and horns.

The description of the above-mentioned organs is relatively limited because of the size of the publication. The book is written clearly and has many good illustrations.—[*Lehrbuch der vergleichenden Anatomie der Haustiere. By J. Dobberstein and T. Koch. 3rd ed. 234 pages; 172 illustrations. S. Hirzel Verlag, Leipzig, Germany, 1958. Price $3.80.*]—F. KRAL.

THE NEWS

A.A.H.A. to Meet in Colorado Springs

The American Animal Hospital Association will hold its twenty-sixth annual meeting at Colorado Springs, May 6-9, 1959.

A full two and one-half day program will include rostrum and television presentations. General sessions will be held at the new City Auditorium and other Association functions will be conducted at the Broadmoor and Antlers Hotels. Preconvention workshops and seminars are scheduled at the Broadmoor Hotel on Wednesday, May 6, and the convention will open on May 7.

Sightseeing trips, visits to a working ranch, to the new U. S. Air Force Academy, and a chuckwagon dinner are also planned for the convention guests.

Programs were made available about April 1 and may be obtained by writing to the American Animal Hospital Association, 5335 Touhy Ave., Skokie, Ill.

Dr. F. L. Herchenroeder Leaves Retirement to Rejoin the U.S.D.A.

Dr. Francis L. Herchenroeder (STJ '18) has returned to the force of the Animal Disease Eradication Division of the Agricultural Research Service, U.S.D.A., as staff officer for Interstate Regulations Enforcement, in Washington, D.C.

Dr. Francis L. Herchenroeder

He returned to duty in January, after his retirement as veterinarian in charge of animal disease eradication and animal inspection and quarantine work in Texas in 1957.

Life Sciences Working Group for Aircraft Nuclear Propulsion

The Atomic Energy Commission and the Department of the Air Force have announced the formation of a Life Sciences Working Group for the Aircraft Nuclear Propulsion Office. Begun last January, it is operated jointly by both agencies.

Of the six members of the group, two are veterinarians: Major Charles M. Barnes (TEX '44), V.C., U.S.A.F., Rockville, Md., chairman; and Dr. Leo K. Bustad (WSC '49), General Electric Company, Richland, Wash. Functions will include assisting in defining the human factors problem associated with nuclear propulsion air craft and missiles and in examining health and safety characteristics of specific propulsion systems.

The six-man team meets semiannually at Air Force, A.E.C., or contractor facilities. They met at the Nevada Test Site of the Atomic Energy Commission last January.

Educators in Veterinary Radiologic Science Meet in Chicago

The second annual meeting of the Educators in Veterinary Radiologic Science was held in Chicago, Nov. 15-16, 1958, at the Palmer House Hotel. This meeting was held just prior to the forty-fourth annual meeting of the Radiological Society of North America so that attending veterinary medical educators could take advantage of the excellent refresher courses offered.

The E. V. R. S. was organized one year ago and is made up of veterinarians and physicians who have the responsibility of teaching veterinary radiology in the veterinary colleges and postgraduate veterinary training institutions in North America. Its purpose is to standardize all phases of diagnostic and therapeutic radiology taught and practiced.

Included in the scientific portion of the program were: Drs. A. J. Cawley, Ontario Veterinary College, assisted by F. Spurrell, University of Minnesota, and J. Geary, Cornell University—navicular disease; Newton Tennille, Oklahoma State University—classification system for filing radiographs; D. Maksic, University of Illinois—esophageal neuromuscular dysfunctions; Robert Barrett, Kansas State College—teaching grants to Atomic Energy Commission; W. C. Banks, A. & M. College of Texas—"osslets," "spavins," "splints;" W. D. Carlson, Colorado State University—radiotherapy; F. Spurrell—body radiation in lymphoma cases; E. Reber, University of Illinois—wholesomeness of irradiation sterilized beef; B. F. Hoerlein, Alabama Polytechnic Institute—canine spinal radiography.

A special feature of the program was provided by Dr. A. E. Broome (M. D.), Ontario Veterinary

College, who described and illustrated his hobby of examining, by x ray, renowned art canvases for fraud and misrepresentation. The first day of the meeting was terminated with a film-reading section.

The second day was devoted to a detailed discussion of the long-range aims and objectives of the Educators in Veterinary Radiologic Science. Dr. Lawrence H. Robbins (M. D.), of Boston, president-elect of the Radiologic Society of North America, was a guest speaker and consultant at this session.

It is hoped that the Educators in Veterinary Radiologic Science may be used as an advisory board by the veterinary profession on all problems concerning veterinary radiology.

s/W. D. CARLSON, *College of Veterinary Medicine, Colorado State University.*

Radioactive Contamination of Foods Studied

A course on the examination for radioactive contamination of foods was conducted by the Division of Veterinary Medicine, Walter Reed Army Institute of Research, from October to December, 1958.

Designed to train officers in methods of detecting and measuring radioactive contamination of foods, the course also included the basic techniques for the use of radioactive isotopes as diagnostic and research tools.

s/M. B. STARNES, *Director.*

Chicago Hosts First Leptospirosis Conference

The first conference for research workers concerned with leptospirosis was held in Chicago at the Hamilton Hotel, Nov. 29-30, 1958. The meeting was sponsored by the Animal Disease and Parasite Research Division of the Agricultural Research Service, U.S.D.A. Conferees included research workers from 13 states, from the Animal Disease and Parasite Research Division, and from the State Experiment Station Division of the U.S.D.A.

Officers for the ensuing year are: Drs. E. V. Morse. Iowa State College, chairman, and D. E. Hughes, ARS, Beltsville, Md., secretary. In addition, the chairmen of the subcommittees, each of which will deal with an important area of research on leptospirosis, are: Drs. A. D. Alexander, Walter Reed Army Medical Center, propagation and identification of the genus, Leptospira; C. D. Cox, School of Medicine, University of South Dakota, reproduction and nutrition of Leptospira; E. E. Roth, Department of Veterinary Science, Louisiana State University, diagnostic procedures; S. G. Kenzy, College of Veterinary Medicine, State College of Washington, immunology and therapeutics; and R. L. Morter, Department of microbiology and Public Health, Michigan State University, mechanisms and course of infection.

The operation of this group was patterned after a highly profitable conference held for research

Participating in the course were: front row, left to right—Major Pedro LaBanda Egido, V.C., Spanish Army; Mrs. Flo Ward, course director; Colonel M. B. Starnes, V.C., director, Division of Veterinary Medicine; Lt. Colonel G. W. Vacura, V.C., coordinator of training; Capt. Juan Algaba Roldan, V.C., Spanish Army.

Back row, left to right—Lt. Colonel F. C. Votaw, V.C.; Captain J. L. Adcock, V.C.; Lt. Colonel Robert Ryer, M.S.C., U.S.A.; Captain K. W. Lorentzen, V.C.; Lt. Colonel W. H. Dieterich, V.C.; Lt. Colonel D. P. Sasmore, V.C., U.S.A.F.

workers on brucellosis. Designed to bring together those who are actively working on leptospirosis with the objective of interchanging ideas, its participants are working toward a more rapid solution of one of the poorly understood aspects of leptospiras and the disease they produce.

Those who have a particular interest in any of the areas in the program are invited to offer their suggestions directly to the subcommittee chairman for possible use at the next meeting, in November, 1959.

s/L. C. FERGUSON, *Michigan State University.*

The National Cattle Grub Committee

The 1959 annual meeting of Livestock Conservation, Inc., was held at the Congress Hotel in Chicago, February 11-12.

The National Cattle Grub Committee and four subcommittees presented all available information pertinent to a correct evaluation of the grub control program to date, and to the development of sound recommendations for the guidance of the cattle industry in the next grub control season.

s/J. M. CUNKELMAN, *Chairman.*

AMONG THE STATES AND PROVINCES

Alabama

Central Alabama Association.—New officers of the Central Alabama V.M.A. installed on Jan. 10, 1959, are as follows: Drs. Joe T. Williams, Maxwell Air Force Base, president; George W. Jones, Prattville, vice-president; and James L. Chambers, Montgomery, secretary-treasurer.

s/G. W. JONES, *Vice-President.*

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Neurosurgery Included in A.P.I. Curriculum.—Neurosurgery, a new graduate course (VM 634), is currently being taught in the School of Veterinary Medicine at Alabama Polytechnic Institute, Auburn, according to a recent announcement by Dr. J. E. Greene (API '33), dean. This is perhaps the first course of its kind to be taught in a veterinary school.

Divided into three sections, neurosurgery at A.P.I. includes: neuroanatomy—taught by Dr. L. E. Evans (KSC '51); neurophysiology—taught by Dr. C. H. Clark (WSC '47); and clinical and surgical neurology—taught by Dr. B. F. Hoerlein (COL '43). The main purpose of the course is to teach, with respect to the nervous diseases, not only the treatment (especially surgical), but also the principles of diagnosis by physical and radiographic examination.

STATE BOARD EXAMINATIONS

IOWA—June 1-2, 1959, Office of the Division of Animals Industry, State House, Des Moines, Iowa, not later than 8 o'clock on the morning of June 1. Further information may be obtained from Dr. A. L. Sundberg, chief, Division of Animal Industry, State House, Des Moines 19, Iowa.

KENTUCKY—June 17, 1959, State Capitol Building, Frankfort, Ky. Jack E. Winkler, secretary-treasurer, Kentucky Board of Veterinary Examiners, 319 Ann St., Frankfort, Ky.

OHIO—June 8-10, 1959, Sisson Hall, College of Veterinary Medicine, Ohio State University, Columbus, Ohio. Applicants must be present at 8 a. m. on the first day. Application forms may be obtained from the office of the Executive Secretary, Ohio Veterinary Medical Board, Room 720, Ohio Departments Building, Columbus 15. All application forms must be returned to the Secretary not later than May 4, 1959. Dr. H. G. Geyer, executive secretary.

NORTH CAROLINA—June 22-24, 1959, Morehead Biltmore Hotel, Morehead City, N. Car. Dr. James I. Cornwell, secretary-treasurer, North Carolina State Veterinary Examining Board, 65 Beverly Rd., Beverly Hills, Asheville, N. Car.

TEXAS—Next licensing examination will be held June 1-3, 1959, A. & M. College of Texas, College Station. The completed application must be received in the Board office not later than 30 days before the examination date. Applications should be sent to Mr. T. D. Weaver, 207 Capital National Bank Building, Austin 16, executive secretary, State Board of Veterinary Medical Examiners.

UTAH—June 11-12, 1959, Utah State Capitol Building, Salt Lake City, Utah. Dr. Wayne Binns, chairman, Utah Veterinary Examining Board, 555 North Third East, Logan, Utah.

DEATHS

Star indicates member of AVMA

Cecil I. Corbin (COR '11), Leonia, N.J., former director and vice-president of Sheffield Farms Company, New York, one of the largest dairy companies in that area, died on Dec. 22, 1958, after a long illness.

He joined the Sheffield organization in 1911 as the company's first veterinarian and sanitary inspector of dairy farms. Dr. Corbin was made head of the sanitation department in 1927 and later was elected vice-president of the company. He retired in 1946.

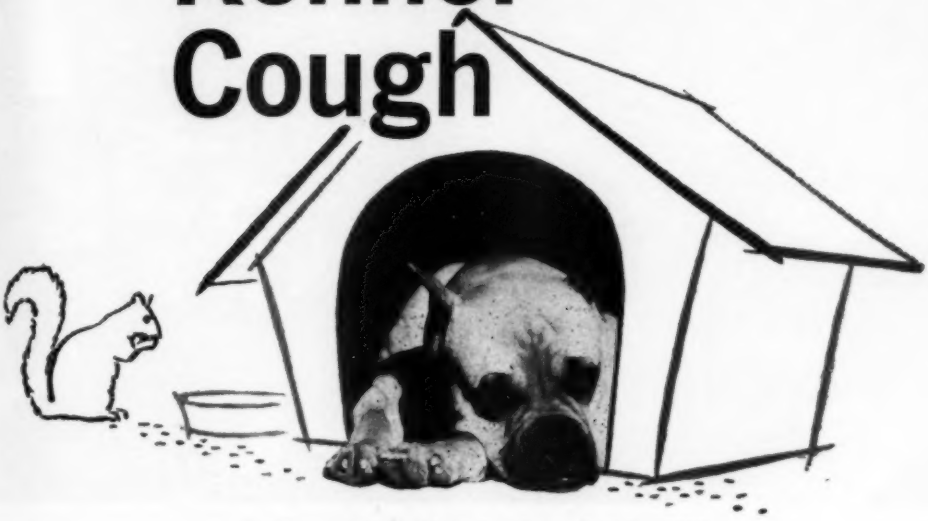
Lewis C. Colgan (MCK '10), 74, Tyndall, S. Dak., died of cancer at his home, Feb. 27, 1959.

Born in Tyndall, Dr. Colgan had practiced there for 48 years, before his retirement. He was a former city councilman.

★**Floyd D. Marquiss** (SF '17), 68, Rialto, Calif., died of a heart attack on Jan. 29, 1959, in Aberdeen, Wash., while visiting a sister.

Dr. Marquiss had been employed by the California State Department of Agriculture for 27 years before engaging in private practice in Rialto in 1954. He had retired from practice on July 1, 1958.

Kennel Cough



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DEPARTMENT OF VETERINARY MEDICINE

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Kansas City—1959 Convention City
96th Annual Meeting—August 23-27

For the fourth time, Kansas City, Mo., will be host to the Annual Meeting of the American Veterinary Medical Association. The first time was in 1907, ten years later in 1917, and the last time in 1931.

The closest major city to the geographical center of the United States, the twin Kansas Cities of Missouri and Kansas are major centers for packinghouses and veterinary medical suppliers.

Three airlines have 54 flights daily to Kansas City and 12 railroads run 300 trains into and out of Union passenger station daily. Six U.S. highways (24, 20, 50, 69, 71, 73 and 169) serve automobile traffic headed for Kansas City from all over the nation. The City is about a 12-hour drive from Chicago to the east and Denver to the west.

Because of its central position, Kansas City is an advantageous meeting place for national conferences. The Municipal Auditorium is located in the heart of the city. Completed in 1936, the building can seat 24,000 persons in 32 separate units. The main arena alone seats 14,000.

The Hotel Muehlebach, AVMA headquarters, is less than a block away from the Auditorium and conveniently connected by an underground parking area providing a covered passage for conventioneers walking between the two centers of activity.

All spaces in the Auditorium and the headquarters Hotel are air-conditioned. Many of the rooms in other convention hotels are also air-conditioned.

No Tour This Year

There will be no planned group travel to Kansas City or postconvention tours in connection with the meeting there. However, over 100 U.S. veterinarians and wives are attending the International Veterinary Congress in Madrid in May.

Future issues of the JOURNAL will carry additional information on points of interest in and around Kansas City, and vacation opportunities in the area.

Hotels and Housing

Information on the 14 official hotels will be found on advertising page 47 of this issue, facing a location map (p. 46) for hotels and some other conveniently located points of interest; a reservation form is on advertising page 48.

The Kansas City Convention and Visitors Bureau is now accepting reservations for the August meeting dates.

Kansas City after dark—a view of the city chosen for the AVMA Annual Meeting and the Pan American Congress, which will be held jointly August 23-27.

ATTEND THE AVMA CONVENTION . . .
Make Your Hotel Reservations Today!

WOMEN'S AUXILIARY

President—Mrs. E. A. Woelffer, 115 Woodland Lane, Oconomowoc, Wis.
Secretary—Mrs. A. W. Eivers, 1745 S. 13th St., Salem, Ore.

The Auxiliary Workers' Conference

For many years, the Women's Auxiliary to the AVMA had a conference known as the "Presidents and Secretaries Meeting" held during the time of the national convention. It was at this meeting that the state and provincial auxiliaries could gain assistance for leadership in their groups.

However, attendance was not always what was anticipated, and with state and national auxiliary memberships increasing rapidly, the Executive Board felt that many excellent ideas and helpful suggestions were not reaching the local membership.

Two years ago the name was changed to the "Workers' Conference." Not only were the presidents and secretaries of each auxiliary urged to attend, but the membership secretaries and other interested women were also invited to be present.

The Auxiliary Workers' Conference is an informal meeting where we hope each constituent auxiliary representative will want to ask questions about her own local problems and who will also contribute information about successful projects which have been promoted in her own state. Last year, the attendance increased beyond anticipated numbers and extra chairs had to be brought in. There was much enthusiasm shown about ways of improving membership at the local level, suggestions for collecting dues, ideas for programs at meetings, plus a greater exchange of information about the profession as a whole.

We hope all the leaders of each regional and state auxiliary will attend this fine meeting, and through the exchange of ideas we can solve problems that interfere with ultimate goals. We know you can help us with your suggestions, and we will try to contribute as much as possible in our capacity as an executive board. Come and join us this year, and let us all work together.

s/Mrs. (Marguerite) Lewis Moe
Chairman, Workers' Conference

Iowa State Student Wives and AVMA Auxiliary Members Hold Annual Party

"The Music Man" was the theme for the annual party held at Iowa State College Feb. 5, 1959. This program was a joint activity sponsored by the 150 women of the Women's Auxiliary to the Iowa Student Chapter and the Veterinary Circle.

Co-chairmen for the program were Mrs. James Lovell, Mrs. Durward Baker, Mrs. Paul Bennett, Mrs. Erskine Morse, Mrs. Phillip Pearson, Mrs. Joseph C. Picken, Jr., Mrs. Kenneth Preston, Mrs. Ward Richter, and Mrs. Keith Roades, all of the Veterinary Circle. Mrs. Robert R. Matheson, Mrs. F. A. Barile, Mrs. Edward L. Ford, Mrs. Lowell Krebs, Mrs. Cecil W. Lange and Mrs. Merle Lockwood represented the student wives as co-chairmen.

Mrs. Don J. Casey is president of the Women's Auxiliary to the Student Chapter, and Mrs. B. W. Kingrey is advisor. Mrs. Richard Lundvall is president of the Veterinary Circle.

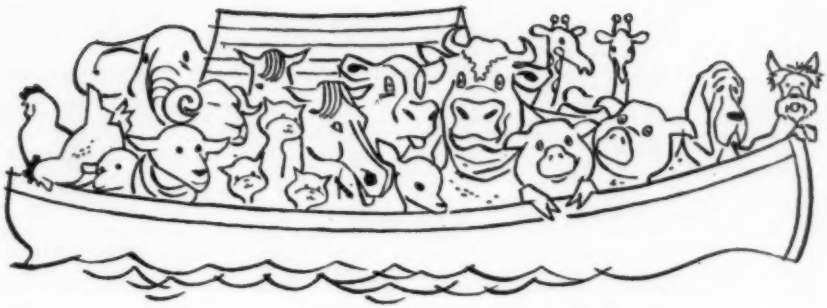
s/MRS. I. A. MERCHANT

• • •

Sioux City Serum Company Closes

The Sioux City Division, Allied Laboratories, was consolidated, late in 1958, with the Sioux Falls Division at Sioux Falls, S. Dak.

The Sioux City Serum Company was established about 45 years ago as one of the pioneer commercial producers of anti-hog cholera serum. It later became affiliated with Allied Laboratories. Being in the heart of the area where swine erysipelas is most enzootic, personnel of the laboratory, particularly the late, Drs. T. W. Munce and L. E. Willey, pioneered also in contributing vitally to our knowledge of that disease.



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The synergism of Neomycin and Polymyxin B extends the bacteri*cidal* action well beyond the limits of either antibiotic. The broad spectrum of effectiveness has been reported authoritatively in numerous published clinical studies.[1,2,3]

Because Daribiotic is bacteri*cidal*, resistant organisms have little opportunity to develop. Convenient dosage forms for the treatment of small and large animals broaden the usefulness of Daribiotic.

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NEOMYCIN-POLYMYXIN B*

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DARIBIOTIC Injectable—for prompt treatment of bacterial infections.
DARIBIOTIC Mastitis Infusion—in 7.5-cc. tubes and 100-cc. vials.
DARIBIOTIC-AH —12-cc.disposable syringe for mastitis infusion.
DARIBIOTIC Tablets—for control of intestinal infections.
DARIBIOTIC Soluble—convenient oral administration in liquids for intestinal infections.

*U.S. Patent No. 2,565,057

1. Barr, F.S., Carman, P.E. and Harris, J.R.: Synergism and Antagonism in Antibiotic Combinations; Antibiotics and Chemotherapy; 4:818 (1954).
2. Baker, W.L.: Clinical Use of Injectable Neomycin and Polymyxin B; Veterinary Medicine, 53 (1958):275.
3. Barr, F.S., Harris, J.R. and Carman, P.E.: Intramuscular Treatment of Staphylococcic Mastitis with Neomycin Sulfate and Polymyxin B Sulfate; J.A.V.M.A., 132 (1958): 110.

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COMING MEETINGS

Notices of coming meetings must be received 30 days before date of publication.

Oklahoma State University. Annual Oklahoma conference for veterinarians. College of Veterinary Medicine, Campus Veterinary Medical Center, April 13-14, 1959. John H. Venable, steering committee chairman.

Pennsylvania, University of. Fifty-ninth annual conference of veterinarians. School of Veterinary Medicine, University of Pennsylvania, Philadelphia, April 28-29, 1959. Mark W. Allam, dean.

Florida, University of. Second conference for veterinarians. J. Hillis Miller Health Center, University of Florida, Gainesville, May 2-3, 1959. W. R. Pritchard, program chairman.

Kansas Veterinary Medical Association. Twenty-first annual conference. School of Veterinary Medicine, Kansas State College, Manhattan, May 31 (evening) to June 2, 1959. M. W. Osburn, 1525 Humboldt, Manhattan, secretary-treasurer.

Texas, A. & M. College of. Twelfth annual conference. School of Veterinary Medicine, A. & M. College of Texas, College Station, June 4-5, 1959. R. D. Turk, chairman.

Illinois, University of. Fourth Biennial Symposium on Animal Reproduction. University of Illinois, Urbana, June 18-20, 1959. Address P. J. Dziuk, 111 Animal Genetics, University of Illinois, Urbana, for further information.

South Carolina Association of Veterinarians. Annual summer meeting. Clemson House, Clemson, S. Car., June 18-20, 1959. B. C. McLean, 808 Linden St., Aiken, S. Car., program chairman.

Maritime Veterinary Associations, joint conference. Mount Allison University, Sackville, New Brunswick, June 23-25, 1959. P. D. McKercher, Box 310, Sackville, general chairman.

North Carolina Veterinary Medical Association. Fifty-eighth annual summer meeting. Morehead Biltmore Hotel, Morehead City, June 23-25, 1959. J. T. Dixon, secretary-treasurer.

Kentucky Veterinary Medical Association. Forty-eighth annual convention. Sheraton-Seelbach Hotel, Louisville, Ky., July 13-14, 1959. L. S. Shirrell, 545 East Main St., Frankfort, secretary.

Ninety-Sixth Annual Meeting, American Veterinary Medical Association, and Third Pan American Congress of Veterinary Medicine. Joint meeting. Kansas City, Mo., Aug. 23-27, 1959. H. E. Kingman, Jr., executive-secretary, AVMA, 600 S. Michigan Ave., Chicago 5, Ill. B. D. Blood, secretary-general, Directing Council, Pan American Congress of Veterinary Medicine, P.O. Box 99, Azul, F.C.N.G.R., Argentina, S.A.

Foreign Meetings

Veterinary Symposium in Israel (with International Farmers Convention); Veterinary Institute, Beit-Dagan, Israel, May 10-12, 1959. Dr. A. Kimron, Veterinary Institute, director. (Particulars are also obtainable from Dr. H. E. Newman, American Veterinarians for Israel, Box 145, Merrifield, Va.

International Veterinary Congress. Sixteenth session. Madrid, Spain, May 21-27, 1959. Prof. Pedro Carda A., general secretary, Calle Villanueva 11, Madrid.

U.S. COMMITTEE: Dr. W. A. Hagan, chairman, New York State Veterinary College, Ithaca, N. Y.; Dr. J. G. Hardenbergh, secretary, 600 S. Michigan Ave., Chicago 5, Ill.

Third World Congress on Fertility and Sterility. Amsterdam, Holland, June 7-13, 1959. Dr. L. I. Swaab, Sint Agnietenstraat 4, Amsterdam, Holland, honorary secretary.

Regularly Scheduled Meetings

ALABAMA—Central Alabama Veterinary Medical Association, the first Thursday of each month. James L. Chambers, 4307 Normanbridge Rd., Montgomery, Ala., secretary-treasurer.

Jefferson County Veterinary Medical Association, the second Thursday of each month. Dan P. Griswold, Jr., 714 S. 39th St., Birmingham, secretary.

Mobile-Baldwin Counties Veterinary Medical Association, the third Tuesday of each month. W. David Gross, 771 Holcombe Ave., Mobile, Ala., secretary.

North Alabama Veterinary Medical Association, the second Thursday of November, January, March, May, July, and September, in Decatur, Ala. Ray A. Ashwander, P.O. Box 1767, Decatur, Ala., secretary.

Northeast Alabama Veterinary Medical Association, the second Tuesday of every other month. Leonard J. Hill, P.O. Box 761, Gadsden, Ala., secretary-treasurer.

ARIZONA—Central Arizona Veterinary Medical Association, the second Tuesday of each month. J. W. Langley, Jr., P.O. Box 5013, Phoenix, Ariz., secretary.

Southern Arizona Veterinary Medical Association, the third Wednesday of each month at 7:30 p.m. Gwyn Chapin, 2215 E. Calle Vista, Tuscon, Ariz., secretary.

Weight losses reduced when cattle are shipped*

Veterinarians and cattlemen have long sought to reduce weight losses suffered by cattle when shipped from range to feed lot. Weight losses caused by the rigors of handling, loading, and shipping cannot be reduced unless the tension, nervousness, and unruliness associated with these procedures are controlled.

INJECTION SPARINE given intramuscularly to cattle prior to shipment markedly reduces weight losses when cattle are shipped. SPARINE-treated cattle remain steady on their feet even in transit *without impairment of consciousness*.

In a study supervised by veterinarians, cattle were shipped from a range in Oklahoma to a Colorado feed lot—an 18-hour truck trip. The veterinarians observed that not only were weight losses reduced by over fifty per cent in most cases, but the animals given SPARINE, 0.5 mg. per pound of body weight, were easier to handle; they went back on feed faster because they adjusted to their new surroundings without milling, fence walking, and bawling.

In Small Animal Practice

SPARINE is useful also to reduce struggling during physical and x-ray examinations, and during dental procedures. When administration of a general anesthetic is undesirable, local anesthesia supported by SPARINE offers a satisfactory substitute. Given orally or parenterally, SPARINE calms animals during hospitalization and convalescence, reducing patient mutilation of bandages, sutures, etc. As adjunctive therapy, SPARINE reduces self-inflicted damage associated with otitis, eczema and pruritus.

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*From range to feed lot.

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TABLETS: 25, 50, 100 mg., vials of 50.

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ARKANSAS—Pulaski County Veterinary Medical Society, the second Tuesday of each month. Harvie R. Ellis, 54 Belmont Drive, Little Rock, Ark., secretary-treasurer.

CALIFORNIA—Alameda-Contra Costa Veterinary Medical Association, the fourth Wednesday of Jan., March, May, June, Aug., Oct., and Nov. John S. Blackard, 420 Appian Way, Richmond, Calif., secretary.

Bay Counties Veterinary Medical Association, the second Tuesday of February, April, July, September, and December. Herb Warren, 3004 16th St., San Francisco, Calif., executive secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. Paul S. Chaffee, 2333 McKinley Ave., Fresno, Calif., secretary.

Humboldt-Del Norte Counties Veterinary Medical Association, the second Tuesday of January, May, September, and November. Dr. C. A. Lamb, 2835 Dolbeer St., Eureka, Calif., secretary.

Kern County Veterinary Medical Association, the first Thursday evening of the month. James L. Frederickson, 17 Nile St., Bakersfield, Calif., secretary-treasurer.

Mid-Coast Veterinary Medical Association, the first Thursday of each month. William P. Matulich, P. O. Box 121, San Luis Obispo, Calif., secretary-treasurer.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. V. Todorovic, 47 Mann Ave., Watsonville, Calif., secretary.

Northern California Association of Veterinarians, the second Tuesday of the month. Andrew F. Giambroni, P.O. Box 782, Red Bluff, Calif., secretary.

North San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month at the Hotel Covell, in Modesto, Calif. T. J. Carleton, 325 W. Lockeford St., Lodi, Calif., secretary-treasurer.

Orange Belt Veterinary Medical Association, the second Monday of each month. R. Y. Foos, P.O. Box 955, Victorville, Calif., secretary-treasurer.

Orange County Veterinary Medical Association, the third Thursday of each month. H. M. Stanton, 1122 S.E. U.S. Highway 101, Tustin, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of the month. R. M. Grandfield, 416 Stephens Rd., San Mateo, Calif., secretary-treasurer.

Redwood Empire Veterinary Medical Association, the third Thursday of the month. R. R. Rediske, 833 Vallejo Ave., Novato, Calif., secretary-treasurer.

Sacramento Valley Veterinary Medical Association, the second Wednesday of the month. E. C. Story, 4819 "V" St., Sacramento 17, Calif., secretary-treasurer.

San Diego County Veterinary Medical Association, the fourth Tuesday of the month. Robert F. Burns, 7572 North Ave., Lemon Grove, Calif., secretary-treasurer.

San Fernando Valley Chapter SCVMA, the second Tuesday of each month at 7:30 p.m., Hody's Restaurant, North Hollywood, Calif. Dr. V. H. Austin, 14931 Oxnard St., Van Nuys, secretary-treasurer.

San Fernando Valley Veterinary Medical Association, the second Friday of each month at the Casa Escobar Restaurant in Studio City. John Chudacoff, 7912 Sepulveda Blvd., Van Nuys, Calif., secretary.

Santa Barbara-Ventura Counties Veterinary Medical Association, every three months, no set date. Gerald M. Clark, 5415 8th St., Carpinteria, Calif., secretary-treasurer.

Santa Clara Valley Veterinary Medical Association, the last Tuesday of the month. Robert L. King, 1269 Grant St., Santa Clara, Calif., secretary-treasurer.

(*Continued on adv. p.* 38)

when fluid losses occur...

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PARENTERAL THERAPY

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IONOSOL® D-CM Solution
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When body fluid losses and debilitating conditions complicate diseases or infections, prompt, "In Kind" fluid replacement offers the best possible supportive therapy. ■ Just as blood losses should be matched by replacement with blood, and plasma losses by plasma replacement . . . so should gastric and duodenal fluid losses be replaced with balanced, "In Kind" electrolyte solutions. ■ A complete line of highest quality, highest purity "In Kind" parenteral solutions is available to the veterinarian through the Veterinary Department of Abbott Laboratories. ■ These—and many other parenteral solutions—are available from the Veterinary Department, Abbott Laboratories, North Chicago, Illinois; your Abbott representative or your distributor.

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Topical corticosteroid-antibiotic therapy for superficial infections of the external ear and ear canal (otitis externa, running ears, abscesses, etc.), and many dermatologic disorders of small animals. Recommended for use in association with Mycostatin Ointment Veterinary for anti-inflammatory, anti-bacterial, anti-fungal therapy.

Florinef-S is indicated for otitis externa (running or abscessed ears); dermatitis (eczematoid, contact), anogenital pruritis, pustular folliculitis and related infections. Florinef-S reduces erythema and swelling, suppresses eruptions, subdues itching with 10 to 25 times the anti-inflammatory action of hydrocortisone; and combats secondary infection with both bacteriostatic and bactericidal action.

Simultaneously with the application of Florinef-S, anti-fungal therapy with Mycostatin is recommended for the control of monilial overgrowth, one of the principal causes of "chronic ears." Florinef-S is "non-messy" due to its aqueous, emollient base. Supplied in 15 cc. plastic squeeze bottles.

Topical antibiotic therapy for mycotic infections of the external ear and ear canal ("chronic ears"), skin, hair roots, feathers, nails, claws, etc. Recommended for use in association with Florinef-S for anti-fungal, anti-inflammatory, anti-bacterial therapy.

Many persistent and recurring infections of the external ear and ear canal ("chronic ears") are often attributed to bacteria, or other agents, when in reality the etiologic organism is mycotic. Mycostatin is the only antibiotic specific against *Candida albicans* (monilia) — one of the principal causes of "chronic ears." Previously hard-to-treat dermatomycoses usually respond promptly and monial lesions usually improve 48 to 72 hours after therapy has been initiated.

Anti-fungal therapy with Mycostatin is recommended simultaneously with anti-inflammatory, anti-bacterial therapy with Florinef-S to control monilial overgrowth effectively. The superior ointment base (Plastibase®) rapidly releases the anti-fungal antibiotic. Mycostatin is supplied in 15 and 30 gm. tubes.

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A highly successful treatment for nymphomania (frequent or constant heat in cows, or failure to come into estrus due to cystic ovaries).

Follutein, a sterile extract of the anterior-pituitary-like sex hormone (chorionic gonadotrophin) found in human pregnancy urine, has proved remarkably effective in establishing a normal estrus rhythm in cows having abnormal cycles due to the presence of cystic ovaries. When ovarian cysts fail to rupture in the normal manner, the hormone contained in their fluid disrupts the normal reproductive cycle. If ruptured mechanically, cysts tend to recur.

Cows become quiet 24 to 48 hours after one 10,000 unit injection of Follutein, usually followed by marked reduction in size of ovaries and establishment of normal estrus cycle in non-breeders. Follutein is supplied in packages of 10,000 international units with diluent.

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Strekacin contains 4 proven therapeutic agents for the treatment of enteric conditions of cows, calves, swine and other domestic animals.

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Southern California Veterinary Medical Association, the third Wednesday of the month. Mr. Don Mahan, executive secretary.

Tulare County Veterinary Medical Association, the second Thursday of each month. J. W. Cole, Rt. 5, Box 326, Visalia, Calif., secretary.

COLORADO—Denver Area Veterinary Medical Society, the fourth Tuesday of every month. Gene M. Bierhaus, 2896 S. Federal Blvd., Englewood, Colo., secretary-treasurer.

Northern Colorado Veterinary Medical Society, the first Wednesday of each month, in Fort Collins. Dr. James Voss, Veterinary Hospital, Colorado State University, Fort Collins, Colo., secretary.

DELAWARE—New Castle County Veterinary Medical Association, the first Tuesday of each month at 9:00 p.m. in the Hotel Rodney, Wilmington, Del. A. P. Mayer, Jr., R.F.D. 2, Newark, Del., secretary-treasurer.

DISTRICT OF COLUMBIA—District of Columbia Veterinary Medical Association, the second Tuesday evenings of January, March, May, and October. R. B. Gochenour, 10109 Ashwood Dr., Kensington, Md., secretary-treasurer.

FLORIDA—Central Florida Veterinary Medical Association, the first Friday of each month at 8:00 p.m., place specified monthly. L. R. Poe, 753 W. Fairbanks Ave., Winter Park, Fla., secretary-treasurer.

Florida West Coast Veterinary Medical Association, the second Wednesday of each month at the Lighthouse Inn, St. Petersburg. Fred Jones, 3606 S. Dale Mabry, Tampa, Fla., secretary.

Jacksonville Veterinary Medical Association, the first Thursday of every month. Dodson's Restaurant, Stephen C. Hite, 5807 105th St., Jacksonville 10, Fla., secretary.

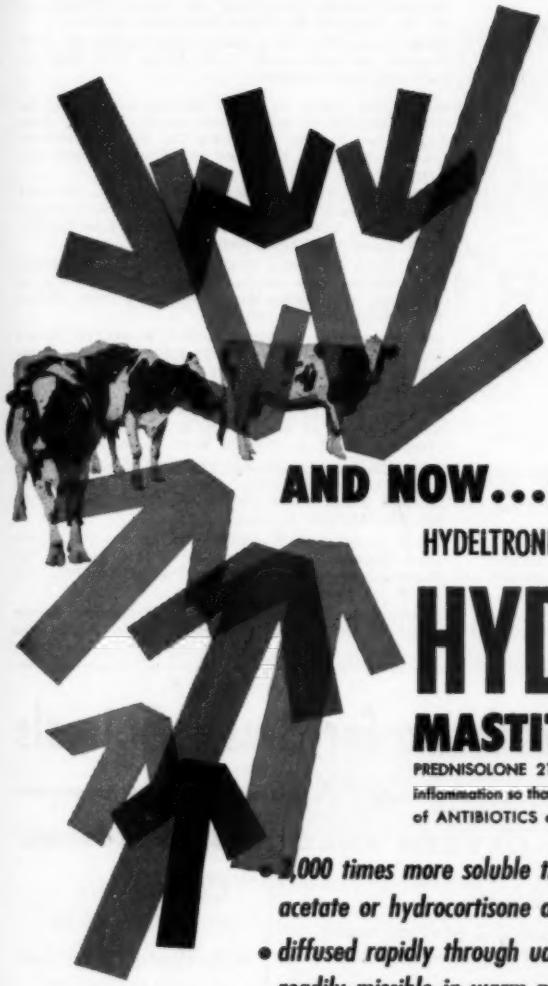
Northwest Florida Veterinary Medical Society, third Wednesday of each month, time and place specified monthly. John Webb, P.O. Box 183, Cantonment, Fla., secretary-treasurer.

Palm Beach Veterinary Society, the last Thursday of each month in the county office building at 810 Datura St., West Palm Beach. B. W. Bigger, 2833 S. 4th St., Fort Pierce, Fla., secretary.

Ridge Veterinary Medical Association, the fourth Thursday of each month in Bartow, Fla. John S. Haromy, Route #1, Box 107-A, Lake Wales, Fla., secretary.

South Florida Veterinary Society, the third Wednesday of each month. Time and place specified monthly. Joe B. O'Quinn, 1690 E. 4th, Hialeah, Fla., secretary.

Suwannee Valley Veterinary Association, the fourth Tuesday of each month, Hotel Thomas, Gainesville. G. L. Burch, P.O. Box 405, Ocala, Fla., secretary-treasurer.



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PROCAINE PENICILLIN	100,000 UNITS
DIHYDROSTREPTOMYCIN (AS THE SULFATE)	100 MG.
NEOMYCIN (AS THE SULFATE)	100 MG.
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*TRADEMARK

Volusia County Veterinary Medical Association, the fourth Thursday of each month. Robert E. Cope, 127 E. Mason, Daytona Beach, Fla., secretary.

GEORGIA—Atlanta Veterinary Medical Society, the third Thursday of each month at the Elk's Home, 726 Peachtree St., Atlanta. Clare L. Bromley, 634 Northside Dr., N.W., Atlanta, Ga., secretary.

Georgia-Carolina Veterinary Medical Association, the second Monday of each month at 8:00 p.m., at the Town Tavern, Augusta, Ga. J. A. Schmitz, 1711 Gwinnett St., Augusta, Ga., secretary.

North Georgia Veterinary Medical Association, quarterly, no set date, the spring meeting at the Veterinary School, Athens, Ga. S. J. Shirley, Commerce, Ga., secretary.

Southeast Georgia Veterinary Medical Association, quarterly, date and meeting place varies. Hugh F. Arundel, P.O. Box 153, Statesboro, Ga., secretary.

South Georgia Veterinary Medical Association, the second Sunday of each quarter at 3:30 p.m., at the Radium Springs Hotel, Albany, Ga. M. W. Hale, Route 2, Tifton, Ga., secretary.

ILLINOIS—Chicago Veterinary Medical Association, the second Tuesday of each month. Charles H. Armstrong, 1021 Davis St., Evanston, secretary.

Eastern Illinois Veterinary Medical Association, the first Thursday of March, June, September, and December. A one-day clinic is held in May. E. I. Pilchard, Champaign, Ill., secretary-treasurer.

INDIANA—Central Indiana Veterinary Medical Association, the second Wednesday of each month. P. T. Parker, 224 N. Mill St., secretary-treasurer.

Michiana Veterinary Medical Association, the second Thursday of every month except July and December, at the Hotel LaSalle, South Bend, Ind. Stanton Williamson, 217 W. Chippewa St., South Bend, Ind., secretary.

Tenth District Veterinary Medical Association, the third Thursday of each month. J. S. Baker, P.O. Box 52, Pendleton, Ind., secretary.

IOWA—Cedar Valley Veterinary Medical Association, the second Monday of each month, except January, July, August, and October in Black's Tea Room, Waterloo, Iowa. A. J. Cotten, P.O. Box 183, Grundy Center, secretary.

Central Iowa Veterinary Medical Association, the third Monday of each month, except June, July, and August, at 6:30 p.m., Breeze House, Ankeny, Iowa. John Herrick, 202 S. Hazel Ave., Ames, secretary.

Coon Valley Veterinary Medical Association, the second Wednesday of each month, September through May, at 7:30 p.m., Cobblestone Inn, Storm Lake, Iowa. Robert McCutcheon, Holstein, secretary.

East Central Iowa Veterinary Medical Society, the Second Thursday of each month at 6:30 p.m., usually in Cedar Rapids, Iowa. T. F. Bartley, P.O. Box 454, Cedar Rapids, secretary.

Fayette County Veterinary Medical Association, the third Thursday of each month at 6:30 p.m. in West Union, Iowa. H. J. Morgan, West Union, secretary.

Lakes Veterinary Association, the first Tuesday of each month, September through May, at 6:30 p.m., at the Gardson Hotel, Estherville, Iowa. Barry Barnes, P.O. Box 162, Milford, secretary.

North Central Iowa Veterinary Medical Association, the third Thursday of April, at the Warden Hotel, Fort Dodge, Iowa. H. Engelbrecht, P. O. Box 797, Fort Dodge, secretary.

Northeast Iowa-Southern Minnesota Veterinary Association, the first Tuesday of February, May, August, and

to settle some of your allergy problems

potent antiallergic agent # PYRIBENZAMINE®

Antihistamines (Pyribenzamine) are strongly recommended by Chambers* as effective therapy for solving the following "cattle practice problems:"

Toxemias Associated With Tissue Damage: retained fetal membranes; trauma to the vagina and vulva caused by rough delivery.

Toxic Conditions such as mastitis, indigestion, bloat.

To Improve Poor Appetite In Fresh Cows "... a daily dose of an antihistamine for two or three days usually will do the trick."*

"Antihistamine therapy has a definite place in cattle practice."*

Other conditions equally responsive to Pyribenzamine:

Many forms of allergic reactions dermatitis, pruritus, urticaria, edematous swelling

Anaphylactic shock in animals sensitized to biologicals

Pulmonary edema

Bronchial asthma and coughing in dogs when caused by or associated with allergy

Laminitis in horses and cattle

Edema from insect bites

Nonspecific stomatitis in cows

Dosage: See CIBA Veterinary Therapeutic Index.

*Chambers, E. E.: N. Am. Vet. 37:105 (Feb.) 1956.

PYRIBENZAMINE® hydrochloride
(tripelennamine hydrochloride CIBA)

CIBA
SUMMIT, N. J.

November at the Wisneslick Hotel, Decorah, Iowa, 6:30 p.m. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

Northwest Iowa Veterinary Medical Association, the second Tuesday of February, May, September, and December, at the Community Bldg., Sheldon. W. Ver Meer Hull, secretary.

Southeastern Iowa Veterinary Association, the first Tuesday of each month at Mt. Pleasant, Iowa. Warren Kilpatrick, Mediapolis, secretary.

Southwestern Iowa Veterinary Medical Association, the first Tuesday of April and October, Hotel Chieftain, Council Bluffs, Iowa. J. P. Stream, 202 S. Stone St., Creston, secretary.

Upper Iowa Veterinary Medical Association, the third Tuesday of each month at 7:00 p.m., at All Vets Center, Clear Lake, Iowa. W. A. Danker, Dows, Iowa, secretary.

KENTUCKY—Central Kentucky Veterinary Medical Association, the first Wednesday of each month. R. H. Folsom, P.O. Box 323, Danville, Ky., secretary.

Jefferson County Veterinary Society of Kentucky, Inc., the first Wednesday of each month in Louisville or within a radius of 50 miles, except January, May, and July. G. R. Comfort, 2102 Reynolds Lane, Louisville, Ky., secretary-treasurer.

MARYLAND—Baltimore City Veterinary Medical Association, the second Thursday of each month, September through May (except December), at 9:00 p.m., at the Park Plaza Hotel, Charles and Madison St., Baltimore, Md. Leonard D. Krinsky, 6111 Hartford Rd., Baltimore, Md., secretary.

MICHIGAN—Central Michigan Veterinary Medical Association, the first Wednesday of every month at 7 p.m. Jerry Fries, 2070 E. Main St., Owosso, Mich., secretary.

Mid-State Veterinary Medical Association, the fourth Thursday of each month with the exception of November and December. Robert W. Acton, 4110 Spring Rd., Jackson, Mich.

Saginaw Valley Veterinary Medical Association, the last Wednesday of each month. Alvin R. Conquest, P.O. Box 514, Grand Blanc, Mich., secretary.

Southeastern Michigan Veterinary Medical Association, the fourth Wednesday of every month, September through May. Louis J. Rossoni, 24531 Princeton Ave., Dearborn 8, Mich., secretary.

MISSOURI—Greater St. Louis Veterinary Medical Association, the first Friday of each month (except July and August), at the Coronado Hotel, Lindell Blvd. and

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SUBJECT: Infectious Bovine

Rhino-tracheitis Vaccine

(Bovine Origin)

INDICATIONS: For the prevention of Infectious Bovine Rhinotracheitis in all cattle by inoculation, just prior to or upon their entering the feedlot.

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PACKAGING: Infectious Bovine Rhinotracheitis Vaccine packaged in 10, 20 and 50 dose vials.

Field tests on Research Laboratories' new Infectious Bovine Rhinotracheitis Vaccine have shown that it confers rapid immunity to I.B.R; the virus is not spread from the vaccinees to other animals, and the vaccine does not produce symptoms. One day's financial loss from I.B.R. costs two to ten times the price of vaccination, which is the only prevention. Research Laboratories' Infectious Bovine Rhinotracheitis Vaccine undergoes tests for sterility, potency, safety, and moisture with the highest quality control standards.

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In small-animal urinary tract infections, FURADANTIN swiftly achieves high bactericidal concentrations in the urine, and in a high percentage of cases eliminates incontinence, dysuria, frequency, and straining. Of 32 dogs and cats recently treated,[1] 29 showed rapid clinical improvement. Often, there is marked improvement by the 4th day and complete recovery in 7 to 14 days.[2]

In canine tracheobronchitis, FURADANTIN given for 5 days stopped the coughing in 95% of 75 cases; in some dogs, complete symptomatic relief was gained in 48 hours.[3]

COMPOSITION:

Each FURADANTIN ORA-BOLS provides FURADANTIN 50 mg. in an excipient containing dextrose.

SUPPLIED:

Bottle of 100 scored 50 mg. ORA-BOLS. FURADANTIN also is available as: 10 mg. and 100 mg. scored tablets, bottles of 100, and Oral Suspension containing 5 mg. FURADANTIN per cc., bottle of 60 cc.

REFERENCES: 1. Mosier, J. E., and Coles, E. H.: Vet. Med. **53**:649 (Dec.) 1958. 2. Belloff, G. B.: Calif. Vet. **9**:27 (Sept.-Oct.) 1956. 3. Mosier, J. E.: Vet. Med. **52**:445 (Sept.) 1957.

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Kansas City Veterinary Medical Association and Kansas City Small Animal Hospital Association, the third Thursday of each month at the Hotel President, Kansas City, Mo. Robert E. Guilfoil, 18 N. 2nd St., Kansas City 18, Kan., secretary.

NEVADA—Western Nevada Veterinary Society, the first Tuesday of each month. Paul S. Silva, 1170 Airport Road, Reno, Nev., secretary.

NEW JERSEY—Central New Jersey Veterinary Medical Association, the second Thursday of November, January, March, and May at Old Hights Inn, Hightstown, N. J. David C. Tudor, R.D. 1, Box 284A, Cranbury, N. J., secretary.

Metropolitan New Jersey Veterinary Medical Association, the third Wednesday evening of each month from October through April, except December, at the Irvington House, 925 Springfield Ave., Irvington, N.J. Bernard M. Weiner, 787 Clinton Ave., Newark, N.J., secretary.

Northern New Jersey Veterinary Association, the fourth Tuesday of each month at the Elks Club, Hackensack. James R. Tanzola, Upper Saddle River, N.J., secretary.

Northwest Jersey Veterinary Society, the third Wednesday of every odd month. G. L. Smith, P.O. Box 938, Trenton, N.J., secretary.

South New Jersey Veterinary Medical Association, the fourth Tuesday of each month at the Collmont Diner, Collingswood, N.J. Marvin Rothman, 718 Dwight Ave., Collingswood, N.J., secretary.

NEW MEXICO—Bernalillo County Veterinary Practitioners Association, third Wednesday of each month, Fez Club, Albuquerque, N.M. Jack Ambrose, 3018 N. Rio Grande Blvd., Albuquerque, secretary-treasurer.

NEW YORK—New York City, Inc., Veterinary Medical Association of, the first Wednesday of each month at the New York Academy of Sciences, 2 East 63rd St., New York City. C. E. DeCamp, 43 West 61st St., New York 23, N. Y., secretary.

Monroe County Veterinary Medical Association, the first Thursday of even-numbered months except August. Irwin Bircher, 50 University Ave., Rochester, N. Y., secretary.

NORTH CAROLINA—Central Carolina Veterinary Medical Association, the second Wednesday of each month at 7:00 p.m. in the O'Henry Hotel, Greensboro. C. G. Sims, 2450 Battleground Ave., Greensboro, N. Car., secretary.

Eastern North Carolina Veterinary Medical Association, the first Friday of each month, time and place specified

monthly. Byron H. Brow, Box 453, Goldsboro, N. Car., secretary.

Piedmont Veterinary Medical Association, the last Friday of each month. J. G. Martin, Boone, N. Car., secretary.

Twin Carolinas Veterinary Medical Association, the third Friday of each month at Orange Bowl Restaurant, Rockingham, N. Car., at 7:30 p.m. J. E. Currie, 690 N. Leak St., Southern Pines, N. Car., secretary.

Western North Carolina Veterinary Medical Association, the second Thursday of every month at 7:00 p.m. in the George Vanderbilt Hotel, Asheville, N. Car. Viiu Lind, 346 State St., Marion, N. Car., secretary.

OHIO—Cincinnati Veterinary Medical Association, the third Tuesday of every month at Shuller's Wigwam, 6210 Hamilton Ave., at North Bend Road. G. C. Lewis, 451 E. Galbraith Rd., Cincinnati, Ohio, secretary-treasurer.

Columbus Academy of Veterinary Medicine, every month, September through May. E. M. Simonson, 3120 Valley View Dr., Columbus, Ohio, secretary-treasurer.

Cuyahoga County Veterinary Medical Association, the first Wednesday in September, October, December, February, March, April and May, at 9:00 p.m. at the Carter Hotel, Cleveland, Ohio. F. A. Coy, 8208 Carnegie Ave., Cleveland, Ohio, secretary.

Dayton Veterinary Medical Association, the third Tuesday of every month. O. W. Fallang, 6941 Far Hills Ave., Dayton, secretary.

Killbuck Valley Veterinary Medical Association, the first Wednesday of alternate months beginning with February. D. J. Kern, Killbuck, Ohio, secretary-treasurer.

Mahoning County Veterinary Medical Association, the Fourth Tuesday of each month, at 9:00 p.m., Youngstown Maennerchor Club, Youngstown, Ohio. Sam Segall, 2935 Glenwood Ave., Youngstown, secretary.

Miami Valley Veterinary Medical Association, the first Wednesday of December, March, June, and September. J. M. Westfall, Greenville, Ohio, secretary-treasurer.

North Central Ohio Veterinary Medical Association, the last Wednesday of each month except during the summer. R. W. McClung, Tiffin, Ohio, secretary-treasurer.

Northwestern Ohio Veterinary Medical Association, the last Wednesday of March and July. C. S. Alvanos, 1683 W. Bancroft St., Toledo, Ohio, secretary-treasurer.

Stark County Veterinary Medical Association, the second Tuesday of every month, at McBrides Emerald Lounge, Canton, Ohio. M. L. Willen, 4423 Tuscarawas St., Canton, Ohio, secretary.

Summit County Veterinary Medical Association, the last Tuesday of every month (except June, July, and August), at the Mayflower Hotel, Akron, Ohio. M. L. Scott, 42 W. Market St., Akron, Ohio, secretary-treasurer.

Tri-County Veterinary Medical Association, the fourth Wednesday of January, May, and September. Mrs. R. Slusher, Mason, Ohio, secretary-treasurer.

OKLAHOMA—Oklahoma County Veterinary Medical Association, the second Wednesday of every month, 7:30 p.m., Patrick's Foods Cafe, 1016 N.W. 23rd St., Oklahoma City. Claude A. Tigert, 3032 N.W. 68th St., Oklahoma City, Okla., secretary.

Tulsa Veterinary Medical Association, the third Thursday of each month in Directors' Parlor of the Brookside State Bank, Tulsa, Okla. Arlen D. Hill, 5302 E. 11th St., Tulsa, Okla., secretary.

Tulsa Association of Small Animal Veterinarians, first and third Mondays, City-County Health Dept. T. E. Messler, 3104 E. 51st St., Tulsa, Okla., secretary.

OREGON—Portland Veterinary Medical Association, the

(*Continued on adv. p. 54*)

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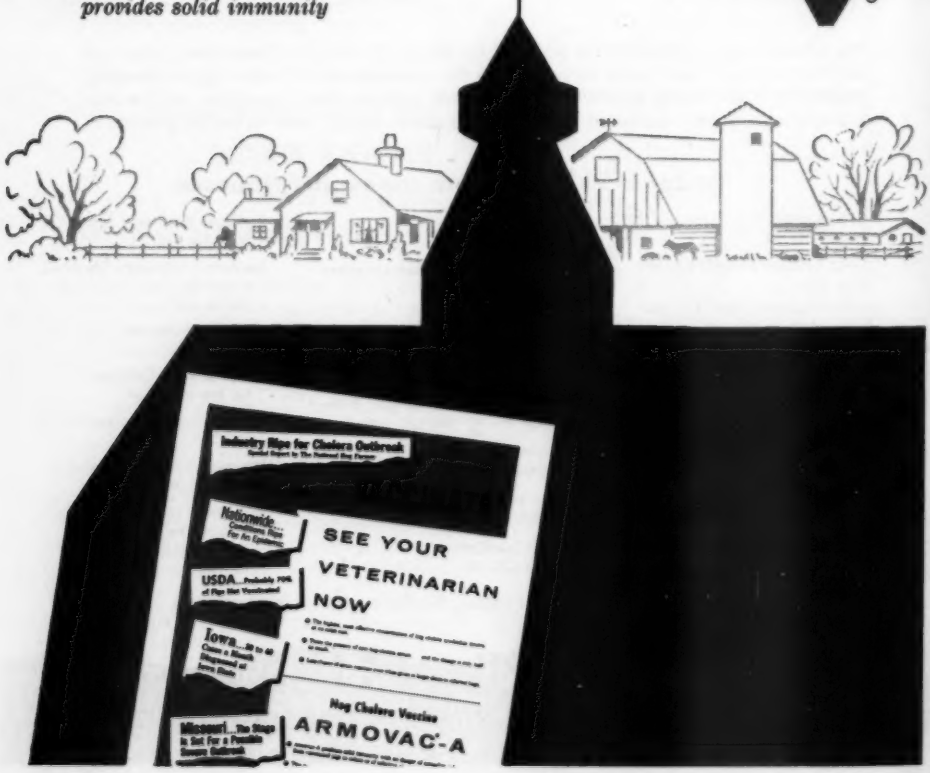

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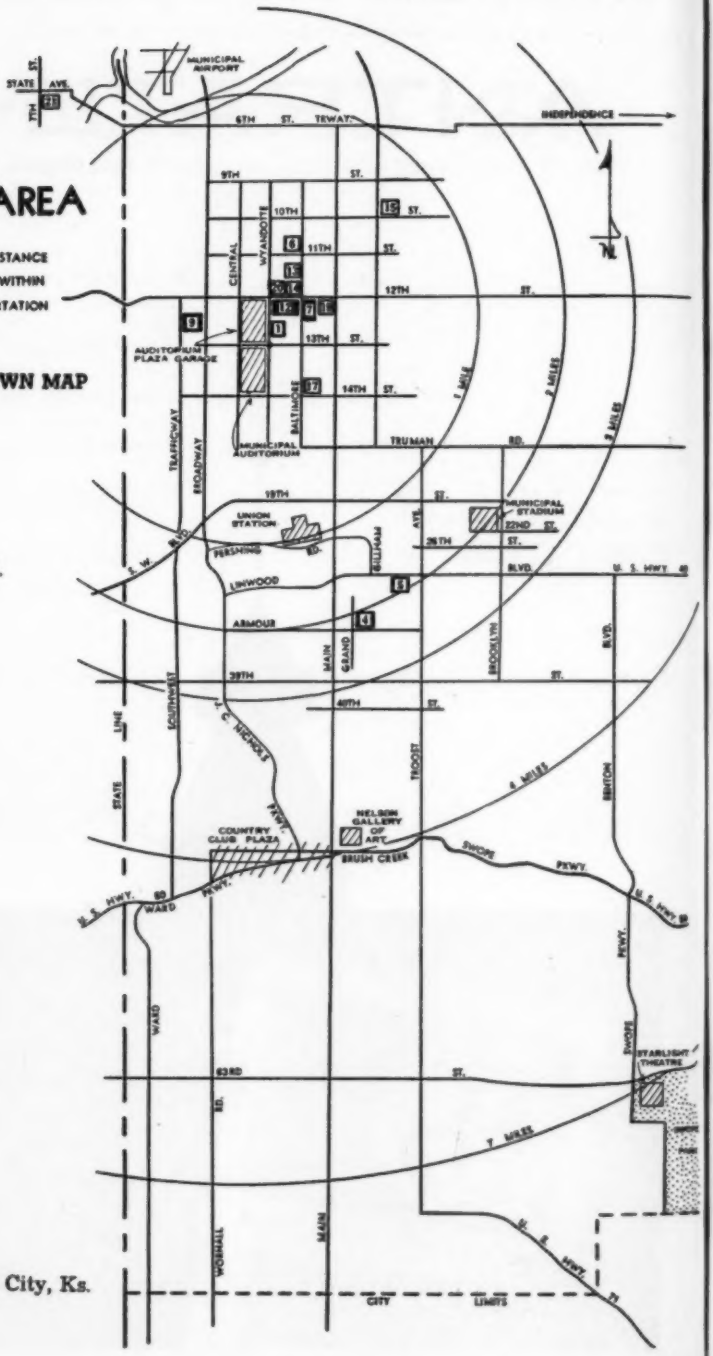
Map of the GREATER KANSAS CITY AREA

ALL HOTELS NOT IN WALKING DISTANCE OF MUNICIPAL AUDITORIUM ARE WITHIN 10 MINUTES BY PUBLIC TRANSPORTATION

HOTEL LIST AND DOWNTOWN MAP

NO.	HOTEL
1	Aladdin, 1213 Wyandotte
4	Bellerive, 214 East Armour Blvd.
5	Berkshire, 1021 E. Linwood
6	Continental, 11th & Baltimore
7	Dixon, 12th & Baltimore
9	Kansas Citian, 1216 Broadway
12	Muehlebach, 12th & Baltimore
13	New Yorker, 1114 Baltimore
14	Phillips, 12th & Baltimore
15	Pickwick, 10th & McGee
17	President, 14th & Baltimore
19	Senator, 17 W. 12th St.
20	State, 12th & Wyandotte
21	Town House, 7th and State, Kansas City, Ks.



HOTEL INFORMATION — KANSAS CITY, MO., CONVENTION

Ninety-Sixth Annual AVMA Meeting, Aug. 23-27, 1959

All requests for hotel accommodations will be handled by a Housing Bureau in cooperation with the Committee on Local Arrangements. The Bureau will clear all requests and confirm reservations.

Hotel and Rate Schedule

Map No.	Hotel	Single	Double	Twin	Suite
1.	Aladdin*	$4.50-8.50	$ 6.50-10.50	$ 9.50-12.00	$17.00-30.00
4.	Bellerive*	5.00-9.00	8.00-12.00	9.00-13.00	From $18.00
5.	Berkshire*	5.00-7.00	7.00-10.00	8.50-10.00	From $14.00
6.	Continental*	6.50-11.00	8.50-13.50	10.00-14.00	$20.00-32.00
7.	Dixon	4.50-7.00	6.50-9.00	8.00-12.00	- - - - - - -
9.	Kansas Citian	3.50-8.00	5.50-11.00	7.00-14.00	From $10.00
12.	Muehlebach*	Headquarters Hotel — No Room Accommodations			
13.	New Yorker	5.50-12.00	8.00-14.00	9.50-14.00	$23.00
14.	Phillips*	7.50-10.50	9.50-13.00	11.50-14.00	$20.50-35.00
15.	Pickwick*	5.85-10.85	6.35-10.85	8.35-12.50	From $14.00
17.	President*	6.50-10.00	9.50-13.00	11.00-15.00	$25.00
19.	Senator	3.50-7.00	5.00-10.00	6.00-10.00	$15.00
20.	State	4.75-6.50	7.50-8.75	8.75-9.25	- - - - - - -
21.	Town House*	5.50-12.00	10.00-13.50	11.00-16.00	From $23.00

*100 per cent air-conditioned; in other hotels listed, majority of rooms air-conditioned.

FAMILY PLAN—The above hotels offer a "family plan" whereby children under 14 years of age will be accommodated in the same room with their parents at no extra charge. If more than one room is required to accommodate children, the hotel will charge only the single rate for each room.

MOTELS—Reservations for motels in the Kansas City area may be made through the Kansas City Convention and Visitors Bureau, 1030 Baltimore Ave., Third Floor, Kansas City 5, Missouri.

PLEASE USE APPLICATION ON REVERSE SIDE FOR HOTEL ACCOMMODATIONS

Application for Hotel Accommodations

1959 AVMA Convention — Kansas City, Missouri

The Convention and Visitors Bureau will make every effort to place you according to your expressed wishes, or to best advantage elsewhere if that is not possible and you desire us to do so.

Please give us the complete information requested below. At least four choices of hotels, or more if you desire, are necessary. Arrange for double occupancy of rooms wherever possible; only a limited number of single rooms is available.

Date.....

Please make hotel reservation in accordance with the following:
Accommodations desired:

Hotel.....First Choice

Hotel.....Second Choice

Hotel.....Third Choice

Hotel.....Fourth Choice

.....Room WITH bath for one person Rate per room desired $..... to $.....

.....Room WITH bath for two persons (double bed) Rate per room desired $..... to $.....

.....Room WITH bath for two persons (twin beds) Rate per room desired $..... to $.....

.....Large room WITH bath for..... persons Rate per room desired $..... to $.....

.....Suite—Parlor, ...Bedroom(s) with bath for ..... persons. Rate per suite desired $.....

Arrival date....., hour.....A. M. .....P. M.
Departure date.....

If reservation cannot be made in one of the hotels indicated shall we place you elsewhere? Yes..... No.....

Please check your mode of transportation: Car..... Train..... Plane..... Bus.....

Rooms will be occupied by (NAMES OF ALL PARTIES MUST BE LISTED)
(PLEASE PRINT)

NAME	STREET ADDRESS	CITY	STATE

.....Check here if you desire accommodations on the FAMILY PLAN.

Name .....

Street address .....

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second Tuesday of each month, at 7:30 p.m. Ireland's Restaurant, Lloyds, 718 N.E. 12th Ave., Portland. Donald L. Moyer, 8415 S.E. McLoughlin Blvd., Portland 2, Ore., secretary.

Willamette Veterinary Medical Association, the third Tuesday of each month, except July and August, at the Marion Hotel, Salem. Robert J. Mallorie, P.O. Box 155, Silverton, Ore., secretary.

PENNSYLVANIA—Keystone Veterinary Medical Association, the fourth Wednesday of each month at the University of Pennsylvania School of Veterinary Medicine. Raymond C. Snyder, N.E. Corner 47th St. and Hazel Ave., Philadelphia 43, Pa., secretary.

Lehigh Valley Veterinary Medical Association, the first Thursday of each month. Stewart Rockwell, 10th and Chestnut Sts., Emmaus, Pa., secretary.

Pennsylvania Northern Tier Veterinary Medical Association, the third Wednesday of each odd numbered month. R. L. Michel, Troy, Pa., secretary.

SOUTH CAROLINA—Piedmont Veterinary Medical Association, the third Wednesday of each month at the Fairforest Hotel, Union, S. Car. Worth Lanier, York, S. Car., secretary.

Georgia-Carolina Veterinary Medical Association—see GEORGIA.

TEXAS—Coastal Bend Veterinary Association, the second Wednesday of each month. Jack E. Habluetzel, Route 1, Box 65-N, Ingleside, Texas, secretary.

Dallas County Veterinary Medical Association, the first Tuesday of each month at 7:30 p.m., at a place to be specified. Frank N. Black, 12830 Preston Rd., Dallas, Texas, corresponding secretary.

VIRGINIA—Central Virginia Veterinarians' Association, the third Thursday of each month at the William Byrd Hotel in Richmond at 8:00 p.m. M. R. Levy, 312 W. Cary Ct., Richmond 20, Va., secretary.

Northern Virginia Veterinary Conference Association, the second Tuesday of each month. T. P. Koudelka, P.O. Box 694, Harrisonburg, Va., secretary.

Northern Virginia Veterinary Society, the second Wednesday of every third month. Meeting place announced by letter. H. C. Newman, Box 145, Merrifield, secretary.

Southwestern Virginia Veterinary Medical Association, the first Thursday of each month. D. F. Watson, Blacksburg, secretary.

WASHINGTON—Seattle Veterinary Medical Association, the third Monday of each month, Magnolia American Legion Hall, 2870 32nd W., Seattle. Roy C. Toole, 10415 Main St., Bellevue, secretary.

South Puget Sound Veterinary Association, the second Thursday of each month except July and August. B. D. Benedictson, 3712 Plummer St., Olympia, Wash., secretary.

WEST VIRGINIA—Kyowva (Ky., Ohio, W. Va.) Veterinary Medical Association, the third Thursday of each month in the Hotel Pritchard, Huntington, W. Va., at 8:30 p.m. Harry J. Fallon, 200 5th St., W. Huntington, W. Va., secretary.

WISCONSIN—Central Wisconsin Veterinary Medical Association, the second Tuesday of each quarter (March, June, Sept., Dec.) C. R. Carlson, 1109 E. LaSalle Ave., Barron, Wis., secretary.

Dane County Veterinary Medical Association, the second Thursday of each month. Dr. E. P. Pope, 409 Farley Ave., Madison, Wis., secretary.

Milwaukee Veterinary Medical Association, the third Tuesday of each month, at the Half-Way House, Blue Mound Rd. Dr. Jordan Lewis, Menomonee Falls, Wis., secretary-treasurer.

Northeastern Wisconsin Veterinary Medical Association, the third Wednesday in April. William Madson, 218 E. Washington St., Appleton, Wis., secretary.

Rock Valley Veterinary Medical Association, the first Wednesday of each month. L. C. Allenstein, 209 S. Taft St., Whitewater, Wis., secretary.

Southeastern Veterinary Medical Association, the third Thursday of each month. John R. Curtis, 419 Cook St., Portage, Wis., secretary.

Wisconsin Valley Veterinary Medical Association, the second Tuesday of every other month. John B. Fleming, 209 E. 4th St., Marshfield, Wis., secretary.

CLASSIFIED ADVERTISEMENTS

PERSONAL WANT ADS—$4.00 for the first 25 words and 10 cents for each additional word; 35 cents for use of box number.

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DEADLINES

1st of month issue — 8th of month preceding date of issue.

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Names of classified advertisers using key letters can not be supplied. Address your reply to the box number, c/o JOURNAL of the AVMA, 600 S. Michigan Ave., Chicago 5, Ill., and it will be sent to the advertiser.

Wanted—Veterinarians

Associate veterinarian for small animal hospital in Connecticut. Excellent opportunity to develop surgical and diagnostic skills. Furnished 4-room apartment available; will consider June graduate. State experience, salary desired. Address "Box G 7," c/o JOURNAL of the AVMA.

Veterinarian to do predominantly large animal work in mixed practice; modern hospital. State age, qualifications, and salary expected. Auto required. Contact Dr. H. Grady Young, Thomasville, Ga.

Wanted—veterinarian with California license to assist in mixed practice. Permanent position with good salary and excellent working conditions. Address Dr. F. H. Saunders, 336 East Lafayette Street, Stockton 3, Calif.

To operate small animal hospital, salary and percentage, rent or lease, option to buy, Arizona license. Dr. M. J. Bramley, 560 S. Scottsdale Rd., Scottsdale, Ariz.

Well-established poultry biological laboratory has position available for veterinarian in diagnostic laboratory and control department. Prefer recent graduate with advanced training in bacteriology and virology. Ideal working conditions with other veterinarians and excellent future. Salary commensurate with qualifications. Address "Box G 14," c/o JOURNAL of the AVMA.

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Wanted—veterinarian to assist in mixed practice in Pennsylvania, large dairy section. Good future. Address "Box G 35," c/o JOURNAL of the AVMA.

Wanted—Positions

Relief veterinarian available, New York and New Jersey licenses, small animals only. Address D.V.M., 1007 80th St., North Bergen, N.J.

Third year veterinary student desires summer job with a practitioner in the Southwest. Address "Box G 27," c/o JOURNAL of the AVMA.

Graduate veterinarian, securing Ph.D. degree in veterinary bacteriology, desires position in institution or commercial concern. Experienced in virology. Address "Box G 28," c/o JOURNAL of the AVMA.

Practitioner ten years, pilot five years, having sold my practice, am seeking position combining both abilities, such as area representative for drug company. Would consider position independent of flying only if sufficiently attractive. Address "Box G 32," c/o JOURNAL of the AVMA.

Wanted—position in California. Extensive experience in small animals, some large. Married, licensed, would consider relief work. Address "Box G 34," c/o JOURNAL of the AVMA.

Graduate Veterinarian, presently obtaining Masters in Public Health, desires challenging position in research, diagnostics, sales and promotion, or teaching fields. Available June 1. Address "Box G 36," c/o JOURNAL of the AVMA.

Wanted—Practices

Desire to purchase—a small animal hospital by experienced practitioner. Licensed in Connecticut, New York, and Massachusetts. Complete information desired. Address "Box G 26," c/o JOURNAL of the AVMA.

Wanted to buy or lease—prosperous small animal hospital in Los Angeles area. Address "Box G 37," c/o JOURNAL of the AVMA.

Wanted to lease or purchase—small animal hospital in California by experienced, licensed practitioner; married. Address "Box G 33," c/o JOURNAL of the AVMA.

For Sale or Lease—Practices

Small animal practice for sale in Brooklyn, N.Y. Excellent income and facilities for further expansion. Quick sale due to illness of owner. For further information, write or phone Mrs. M. Birnbaum, 108-54 64th Ave., Forest Hills, N.Y. Phone: TW 7-8740.

For sale—Midwest mixed practice, 80 per cent dairy and hogs. Includes home, hospital, all drugs and equipment; $10,000 to handle. Other interests. Address "Box G 25," c/o JOURNAL of the AVMA.

Dairy practice in western Wisconsin. Annual gross: $25,000. Will sell for real estate value of $15,000. Address "Box G 29," c/o JOURNAL of the AVMA.

For Rent

For rent—small animal clinic building and 3-bedroom house on half acre land, eastern North Carolina; one hundred twenty-five dollars per month. Address "Box G 31," c/o JOURNAL of the AVMA.

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now in 3 convenient forms

Weladol†

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CREME, SHAMPOO AND NEW DISINFECTANT

gives you iodine's potent fungicidal and bactericidal action

. . . *without* iodine's characteristic toxicity, irritation or stain

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Estimates place the annual loss to the livestock industry from stress conditions alone at $250,000,000. As the exclusive source for Diquel, you play a major role in providing stockmen with the first important advance toward reduction of those losses.

Enthusiastic endorsements from experienced stockmen everywhere tell how Diquel effectively relieves animals of excitement and agitation during periods of stress (weaning, adaptation to the feedlot and new surroundings, branding, dehorning.) They report fewer injuries in transit, easier handling and greater resistance to shipping fever and stress diseases.

Widespread Diquel publicity and advertising in livestock and general farm publications is creating a diversified and growing demand for your services and products. Moreover, Diquel was developed, packaged and priced to help you meet that demand in a manner financially beneficial to you and your clients. In dispensing or professional use, it offers the convenience, dependability and economy you must have to serve your clients best.

Order Diquel from your Jen-Sal Branch or representative. Free professional and client literature available on request.

Jensen-Salsbery Laboratories, Inc., Kansas City, Missouri

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